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CONGRESS IN SESSION

106th CONGRESS

- **H.R.39 A bill to require the Secretary of the Interior to establish a program to provide assistance in the conservation of neotropical migratory birds.**

Introduced January 6, 1999, by Don Young (R-Alaska) and referred to the House Committee on Resources. On January 11, Executive Comment was requested from Interior and on January 11, it was referred to the Subcommittee on Fisheries Conservation, Wildlife and Oceans. Subcommittee hearings were held on February 11. Reported to the Full House on March 17. This Act may

(*Legislation cont'd p. 20*)

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Evaluation of Environmental Enrichment for Laboratory Mice

by

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Abstract

Enrichment of the home cage may provide laboratory animals with an environment in which they can perform more species-specific behavior than in standard laboratory cages. Enrichment also often allows the animals more control over their environment, which may enhance their well-being. Evaluation of the effects of enrichment can be performed in different ways. An overview of the results of a series of experiments that evaluated environmental enrichment for laboratory mice are presented here. The experiments described in this paper have indicated that short- and long-term evaluation studies can be used for interpreting the impact of environmental enrichment on animals.

Introduction

The environment of an animal consists of a lot of stimuli and can be divided into the living environment, that is, the social environment (conspecifics and humans) and the nonliving or physical environment, like the cage and its contents. The animal interacts with all these aspects of his environment. Cages for laboratory rodents should satisfy the physiological and ethological needs of, for example, resting, grooming, exploring, hiding, searching for food, and gnawing. The current environments of labora-



Figure 1. BALB/c mouse in nest made of nesting material (tissues).

tory animals provide only the basic physiological requirements, such as nutrition and sanitation. The confinement of animals to these standard environments with a lack of stimuli may negatively affect the well-being of animals and may lead to the performance of abnormal behaviors such as stereotypies or passiveness (1-4). When the well-being of the animals is compromised, the validity of the animal models used in biomedical experiments is also compromised, which could lessen the reliability of results and conclusions (5, 23).

Environmental enrichment, which provides a more structured environment, allows the animals to express more behaviors, that are within the range of the animals species-specific behavioral patterns. This will improve the biological functioning of animals, and as a consequence, their well-being may improve (1, 6-9). Enrichment can focus on several aspects of the environment. For example:

Housing animals in pairs or groups is a form of social enrichment, which will be beneficial only if the pairs or groups formed are harmonious and stable. Formation of a group does not mean simply adding individuals together, since each individual plays a role in the group, dictated by its age, sex, and position in the hierarchy (10). Mice and rats, being social animals, are often housed in groups, although this is not a natural way of living for the males. In some strains, especially in mice, aggression may give rise to problems, and the males have to be separated. Because humans provide the daily care, they are part of the social environment of laboratory animals.

Another aspect to consider is foraging as part of the nutritional environment. In nature, animals spend a lot of time searching for food. In the laboratory, food can be easily obtained from the food hopper and is mostly provided ad libitum. For enrichment purposes, food particles can be scattered in the bedding so that the animals spend time searching.

The cage and its contents are part of the physical environment. Small cages may increase the incidence of stereotyped movements and other nonlocomotor abnormal behaviours (2). Enlarging the available space may not be the only way to enhance well-being. A better way of enlarging the available space is to structure the environment with, for example, climbing accessories, shelters/refuges, or exercise devices. This also gives the animals a certain degree of control over their environment, as a lack of control may cause stress. In laboratory cages, the possibilities for animals to control their environment are restricted. Providing a shelter or refuge gives them the opportunity to withdraw from frightening stimuli. Plastic tubes (11) or old drinking bottles (12) are simple solutions for shelters for rodents. Providing rodents with nesting material like tissues, hay, or wood-wool enables them to build a nest which offers shelter (figure 1) and it also enables them to hide from too much light, which may have deleterious effects on the eyes.

When introducing enrichment in the laboratory, consider the costs and the practical use of enrichment items. Objects introduced into cages should be easy to remove for workload reasons and should be easy to clean for hygienic reasons. On the other hand, enrichment should be interesting and stimulating for the animals; they must respond to it. Thus, it is important to evaluate enrichment before introducing it. This can be done in several ways.

The effects of the introduction of enrichment can be monitored in the home cage of the animals (home cage observations), by assessing the behavioral patterns before the enrichment was introduced (baseline behavior) and afterwards. The changes in responses to the enrichment can be quantified. Changes that can

be seen include an increase in species-typical behavior and/or a decrease in abnormal behavior.

The effects of environmental enrichment can be evaluated by submitting animals from enriched environments to behavioral test situations, to monitor whether their behavior in such a new environment has been changed (for example, an increase in exploratory behavior or a decrease in freezing behavior). Another type of behavioral test that can be used to evaluate enrichment is a preference test. Preference tests have been used to assess the preferences of laboratory animals for environments or for different aspects of the environment (13-16). Furthermore, the strength of preference has been established in order to measure the importance that an animal attaches to a preferred option (17, 18). Allowing animals to choose between several enrichment items may prevent introduction of enrichment items in which the animals show no interest or that may even harm them (19). Preference tests may also reveal how the animals use the enrichment and may help in determining some species-specific properties of enrichment devices (9, 20).

Enrichment may have consequences not only for the behavior of animals, but also for the physiological state of animals. Therefore, physiological variables (for example, food and water intake, body weight, hormonal levels in plasma or urine, heart rate, and immune status) can be useful parameters to monitor (6, 21, 29). It is also important to assess whether the changes in behavior due to enrichment are maintained over a long period. After introduction of enrichment, the animals may not be interested or might lose interest soon (1, 20, 22).

Overview of experiments

In the next part, an overview is given of the results of a series of experiments in which environmental enrichment for laboratory mice was evaluated (23). In a first experiment, the effect of enrichment objects in the home cages of groups of male mice (C57BL/6J and BALB/c) on their behavior was studied. Simple enrichment objects were put in standard laboratory cages such as: a nest box, a metal grid, a plastic tube, and nesting material. The enrichment had strain-related effects on the behavior of the mice in their home cage but also in behavioral tests (24).

In the next series of experiments, male and female mice of two strains (C57BL and BALB/c) were subjected to choice tests (during 48 hours) in order to study their preference for nesting material or nest boxes as a source of enrichment. Both types of enrichment were used by the mice in the first experiment and they are easily applicable: they can be provided in standard cages and can be sterilized if necessary. Furthermore, nest boxes can be used for a longer period, and nesting material allows mice to build nests.

The preference test system used has been described in detail by Blom et al. (13). In short, a preference test system was used consisting of either two or four test cages, connected by non-transparent tubes to a central cage. The movements of the mice between the test cages were detected automatically by means of photo-electrical devices in the passage tubes. The signals were sent to a computer that calculated dwelling times per cage. The behavior of the mice was also recorded on videotape.

In the first preference test series, six different types of nesting material were evaluated. No significant differences in preference were found between the strains nor between the sexes. All mice showed a clear preference for cages with paper towels or tissues as nesting material. The results also suggest

Enrichment cont'd on p. 18

Year 2000 Impact on Biomedical Research: Implications for Institutional Disaster Planning

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The mission of the MSMR, Inc. is to promote and enhance biomedical research and biological research including the proper care and use of animals, for the improved health and well-being of people, animals, and the environment.

The Year 2000 is less than a year away. Millennium parties have been in the planning stages for years, and the revelry on New Year's Eve is expected to be unprecedented. However, amidst the plans for merriment are activities of a different nature related to New Year's Eve 1999—activities precipitated by the so-called Millennium Computer Bug, or "Year 2000 problem."

The healthcare industry has been slow to address the Year 2000 problem (Y2K), and little or no consideration has been given publicly to how Y2K might impact animal research facilities. In an effort to catalyze discussion and action on this critical topic, this article will offer a brief overview of Y2K, raise some questions about how the Y2K situation could affect animal research facilities in particular, and offer some suggestions for mitigating undesirable outcomes through contingency planning.

A Y2K Backgrounder

Many computer systems have programs that were designed as far back as the 1950s, when computer memory was so expensive that saving disk storage space was essential. As one solution to this problem, when using dates, system programmers truncated the four-digit year date to a two-digit date (e.g., 1997→97). The result was that computers could not tell if the '97' belonged to the 1800s or 1900s or 2000s. So, in other words, January 1, 2000, may be interpreted as January 1, 1900.

Because of this, we are now faced with a problem of global proportions, i.e., finding all the places dates are necessary in all the programs we use and then determining if these programs need to change the way they handle dates. Estimates are that as much as 90% of all legacy software will be affected.

When the clock changes to January 1, 2000, the outcome may be failed systems, malfunctioning systems, or inaccurate or lost data. Perhaps the worst part of the Y2K problem is that no one can predict for sure what exactly will happen, and errors may occur that we hadn't anticipated or won't necessarily recognize immediately.

Y2K is actually a generic term describing a problem with the way computer programs handle dates. In fact, January 1, 2000, is not the only date of concern. For example, some computers are designed to project forward a year and count backward to determine the date. These computers will see January 1,

I believe that severe [Y2K-related] disruptions will occur and that they will last perhaps about a month. Additional problems, ranging from annoyances to more serious issues, will continue cropping up throughout 2000. This prediction might be optimistic; it assumes that people will have done what is necessary to minimize the number of single points of failure that could occur. Accomplishing that alone in the time remaining will require a Herculean effort unprecedented in the history of computers.

*Peter de Jager, "Y2K: So Many Bugs, So Little Time," *Scientific American*, January 1999.*

1999, as '00.' Another example is the world's 24 global positioning satellites, which record time by counting the weeks that have passed since their launch in 1980. At midnight on August 21, 1999, their time counters will be full, and equipment that uses GPS signals may malfunction. In addition, the year 2000 is a leap year, while the year 1900 was not. Even if computers handle the millennium changeover smoothly, many will not accurately determine dates past February 28, 2000, or they will make calculations based on that misinformation.

Embedded technology is the reason Y2K is not merely a computer problem. In the last 20 years, embedded computer chips have become essential to our lifestyle. Whether we realize it or not, embedded technology is at work when we send a facsimile; ride an elevator; mail a letter; call 911 with an emergency; use an ATM card; or pump gas.

Many embedded devices are date-dependent, and many are mission-critical. Embedded systems also support electrical power stations; telecommunications systems; wastewater treatment plants; and pipeline distribution system. Anything that takes any type of measurement or tracks time is suspect, including biomedical equipment and medical devices, building systems, and communications systems.

Y2K & Animal Facility Hot Spots

Utilities

Many so-called experts have predicted that the electric systems of North America will suffer major power outages as a result of the Y2K bug. The North American Electrical Reliability Council (NERC) was formed in 1968 in the aftermath of the November 9, 1965 blackout that affected the Northeastern U.S. and Ontario. NERC's mission is to promote the reliability of the electricity supply for North America.

The January 1999 NERC report to the U.S. Department of Energy — *Preparing the Electric Power Systems of North America for Transition to the Year 2000* — is optimistic that transition through critical Y2K rollover dates will have minimal impact on the electricity supply in North America. More than 44% of mission-critical components have been tested, and the types of errors that have been found thus far "do not appear to affect the ability to keep generators and power delivery facilities in service and electricity supplied to customers." The U.S. receives about 25% of its electricity supply from nuclear-powered plants, and the NERC report states that "nuclear-generating facilities are expected to be available to supply their share of energy needs through the millennium turnover."

The NERC report does caution, however, that telecommunications from external service providers is a key issue for the electric industry due to the uncertainties regarding what capabilities might be lost and the real-time impact of those losses. The Y2K readiness of the nation's railroad system will also play a role in the availability of electricity if problems with rail delivery of coal result in reduced on-site stockpiles at coal-fired plants.

The entire country's electrical power grid is not the most relevant issue, however. It is the links to the local power grid that will affect us. This means that the Y2K issue should be examined closely on a smaller, more community-based level. Research institutions are advised to check the Y2K compliance status of local electricity providers. Even if local power companies are compliant, however, they will not be able to sustain power for long if regional grids are crippled, and there are limits to the transfer capabilities of the North American electrical power grid. If regional grids fail, their only backup is something like the ancient analog systems that are fraught with problems, and surges in power will likely occur.

Backup systems should be in place, and this brings up the question of generators. Backup generators for powering HVAC units and lighting are gasoline- or diesel-powered. Critical services and equipment — for example, lighting, exhaust fans, air handling equipment, and key elevators — should be on a generator, assuming there is availability of fuel. There is certainly a limit to the capacity of emergency generators, and stockpiling fuel brings serious safety issues. Manual backup plans should also be in place, making use of alternative heat and light sources. Stockpiling linens and blankets is a good idea. Backup sources of heat may be necessary, and might include kerosene and gas heaters. Battery-operated lanterns are an inexpensive alternative source of lighting.

Year 2000 Facilities Checklist

For each of the following systems, ask yourself whether it is computer controlled or uses dates. Is it Year 2000-compliant? If YES, how was compliance verified (vendor statement, testing)? If NO, what is the expected compliance date?

Programmable thermostats - HVAC system - Utility monitoring & control system - Elevators & escalators - Fire/smoke detection and suppression systems - Alarm system - Building security system - Parking garage access - Backup lighting & generators - Sprinkler systems - and - Electric locks

The availability of water comes down to flow controllers. Many are to the water 1, 2000, and when the there are no Microordinantly

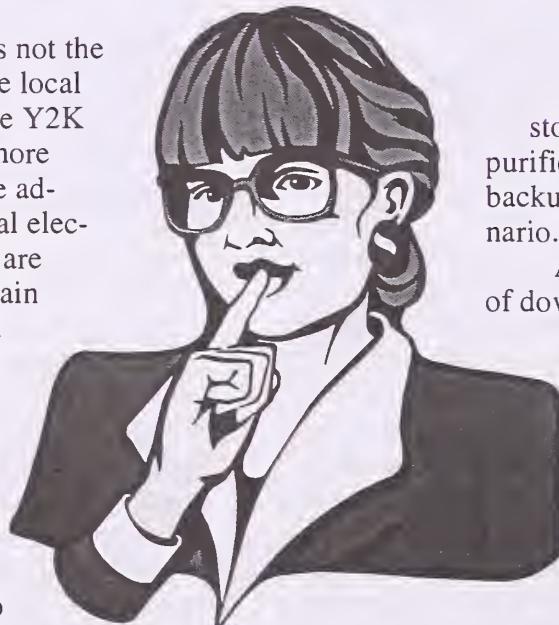
ability of water comes controllers and regulators predicting interruptions supply beginning January there are concerns that flow of water is restored, guarantees it will be "good." ganisms could multiply significantly when the water is stationary, and heavy metals and metal ions could leach into the water. Institutions should check with their local water companies, but it is a good idea to stockpile potable water and consider water purification and water quality monitoring backup plans in the event of a worst-case scenario.

As a precautionary measure in the event of downed phone lines, alternative sources of communication, such as cell phones and two-way radios, may come in handy.

Vendor Supplies & Services

Regarding vendors, one should note in terms of the Year 2000 problem that Y2K-“ready” is not the same as Y2K-“compliant.” “Ready” is a nebulous term with no legal meaning in relation to Y2K. “Compliant” is the word that should be sought from vendors in describing their efforts to continue smooth operation through the millennium turnover.

Information sharing among vendors, manufacturers, service providers, and customers about Y2K problems and solutions is critical. Yet many vendors have been reluctant to share necessary information because it is documentation that could support future liability lawsuits. In order to encourage the necessary information sharing, the Clinton Administration proposed and Congress passed last fall the “Year 2000 Information



Disclosure Act," which limits liability for vendor cooperation on Y2K disclosure.

In any case, manufacturers hold ultimate responsibility for the Y2K-compliance of their products. The best one can do right now is to obtain Compliance Statements whenever possible. See below for an abridged listing of online databases containing product compliance information.

You will want to review vendor and service contracts and select alternate vendors in the event of problems. If you rely on vendors' electronic systems for information, you will need to be assured that they are Y2K-compliant. Despite all the best assurances, however, it may be prudent to ensure that supplies are in stock to cover a minimum of two to four weeks of operation.

Security & Physical Plant

In a worst-case scenario, if infrastructure fails as the millennium turns over, the likelihood of criminal activity will increase. Public awareness of and media attention to Y2K are increasing, and there are indications that animal activists and others are becoming aware of the implications of Y2K for research facility security. FBI director Louis Freeh recently warned that right-wing extremists, religious cults, and "other groups" could turn to violence as the year 2000 approaches, given the vulnerability of institutional infrastructure. The FBI is currently implementing a nationwide assessment of the threat of domestic terrorism on or around January 1, 2000.

Any or all of the major physical plant systems have been predicted to fail due to Y2K-related problems, including elevators, HVAC, door locks, cold rooms, fume hoods, fire alarms, and security systems. Because automated door locks are particularly susceptible, your institution's security department may want to distribute keys to appropriate personnel and/or develop plans for manual entrance. Video surveillance equipment is almost certain to be affected, and security personnel should be trained to implement manual recordkeeping. Security personnel should also be notified of potential false alarms in alarm systems.

Hospitals and other research facilities have additional cause for security and police protection because they are potential sources of drugs. Drug abuse and trafficking are known to increase during the holidays, and the risk of drug-related break-ins during the millennium transition is further heightened.

As a final cautionary note, law enforcement organizations rely on special equipment that is susceptible to Y2K problems (scanners, radar guns, radios, jail security systems, etc.). Law enforcement agencies are still in the process of inventorying and testing these critical items and remediating where problems are found. Cautious institutions may want to consider the services of auxiliary security personnel during the few weeks surrounding the millennium change.

Veterinary & Animal Care Issues

Veterinary and medical supplies, and blood and blood product supplies are critical for maintaining patient care. Based on recent experiences with Hurricane Georges, some have voiced concerns about the viability of the pharmaceutical supply line. Stockpiling of pharmaceuticals may be necessary for research facilities, although downed refrigeration systems could impact many pharmaceuticals and storage space is likely to be an issue. The "just-in-time" method has been recommended for

critical supplies like blood and plasma, where a facility takes delivery as late as possible on December 31, 1999.

Y2K compliance of medical devices has come under serious scrutiny, with a cautionary report issued recently by the General Accounting Office (Compliance Status of Many Biomedical Equipment Items Still Unknown, GAO/AIMD-98-240). Biomedical equipment such as MRIs, x-ray equipment, cardiac defibrillators and pacemakers rely on computers or embedded chips for calibration and/or day-to-day operation. The U.S. Food and Drug Administration (FDA) has reported that two medical devices — an external defibrillator and a multiparameter patient monitor — will fail to display, print or store the correct time of

Y2K Readiness for Animal Facilities: HOPE for the best... but PLAN for the worst

Not even the most credible Y2K computer gurus can predict the exact nature of the problems that will result from the Y2K computer problem. Contingency planning for the millennium turnover, therefore, must account for the worst-case scenario. The critical issues to be considered are utilities (electricity, gas, water, telecommunications); staffing (security, overtime/on-call requirements, transportation); supplies (pharmaceuticals, feed, bedding); equipment (testing); and training (for manual backup).

The best recommendations we can offer for contingency planning at this time are to:

- **Plan to work with no outside power or water.**
Consider generator backup, alternative heat source, and stockpile blankets. Think about personnel and security issues associated with loss of utilities.
- **Plan to work with interruptions in vendor deliveries.**
Stockpile 2-4 weeks of feed and bedding. Use the "just-in-time" method of purchasing blood products and pharmaceuticals.
- **Consider a moratorium on surgical procedures for a period prior to 12/31/99.**
In a worst-case scenario, adequate post-operative care may be impossible.
- **Check anything that plugs into the wall or is run by a battery.**
Have vendor compliance statements on file whenever possible. However, vendor claims may not be good enough and all equipment must be tested.
- **Have manual procedures in place.**
Be sure staff is trained in manual backup procedures.
- **Develop procedures for recovering lost or damaged data.**
Plan to use financial reserves to cover possible shortfall in per diem.

Y2K Risk Management

Four major risk factors should be considered in beginning a Y2K-related institutional risk analysis:

- What critical services does your organization or facility provide that depend on basic utilities - power, water, and telecommunications?
- What critical services does your organization provide that could be affected by the failure of computer systems or equipment containing embedded devices?
- What would be the consequences if these services were disrupted or were unavailable for an extended period of time?
- What are the financial implications of such failure, especially in the event of litigation?

the products' operation, creating incorrect records although not directly endangering patient health. Since many medical devices are used in both people and animals, veterinary issues are raised by these risks. Compliance information on medical devices and biomedical equipment must be provided by the manufacturer. The U.S. Food and Drug Administration (FDA) and others are making this information readily available through databases accessible via the Internet (see sidebar).

Y2K poses other potential risks to veterinary professionals during the millennium turnover. HVAC failure poses a particular and life-threatening problem for immunocompromised animals. And downed refrigeration systems will impact many pharmaceuticals. Adequate post-operative care during this period may be impossible, and Institutional Animal Care and Use Committees may want to consider scheduling a moratorium on surgical procedures for a period of time before and after December 31, 1999.

Office & Laboratory Equipment

One study has predicted pre-1997 personal computers (PCs) to have a 93% Y2K failure rate. PCs made in 1997 and later are predicted to have a 47% failure rate. For Macintosh users, minor glitches have been reported for only a few software packages. Other than that, Macintosh operators are not expected to experience Y2K problems because the Mac operating system handles the date format differently than PCs.

If possible, "fixing" or upgrading office PCs is highly recommended. There are a number of shareware programs available online for do-it-yourself Y2K fixes, and similar Y2K-test and Y2K-fix software is also commercially available. Having laptops available with extra batteries may assist you with maintaining administrative paperwork in the event of desktop PC malfunctions. In any case, maintaining up-to-date paper and electronic backups of all critical computer records is highly recommended.

As for software, many programs are known to have current errors. Karl Fielder of Greenwich Mean Time, a company that markets Y2K-fix software, checked 4,000 PC programs and found that 28% with Y2K date failures were claimed by manufacturers to be Y2K-compliant, and 4% would only run until

12/31/99. This doesn't say much for manufacturer's assurances, and your best bet is to upgrade essential software.

Checking with manufacturers on other essential office equipment is also a good idea. Photocopiers and FAX machines in particular are suspect for Y2K problems. Having a manual typewriter and carbon paper on hand may be helpful.

Any laboratory equipment that takes measurements or tracks time is a Y2K risk. This includes centrifuges, tissue and gas analyzers, autoclaves, and more. Manufacturers should supply compliance statements and support for each instrument or equipment component. Much of this information is also available on the Internet (see sidebar). However, the standard for Y2K is to inventory all equipment and components, and test it regardless of supporting manufacturer documentation. Many of the Y2K form letters that are being issued only address the roll-over to 1/1/2000. They generally do not address the leap year date, which is another issue altogether. The best approach is to obtain vendor compliance statements, file them, and then test equipment anyway.

Personnel Issues

Staff awareness of the Year 2000 problem will allow for better contingency planning on Y2K-related issues, and will better ensure smooth operation during the millennium transition. Many institutions are devising creative ways to relay this information to employees. Some have placed Y2K flyers in envelopes with employee paychecks. Another idea is to provide employees with a personal Y2K checklist to help them identify where in their personal lives they should look and prepare for problems. One such checklist can be obtained by contacting the MSMR office, or can be downloaded from <http://members.theglobe.com/y2000>. The American Red Cross has recently made Y2K disaster readiness documents available online as well at <http://www.redcross.org/disaster/safety/y2k.html>

Y2K and the NIH...

Extracted from a memorandum from the National Institutes of Health (NIH) to presidents of university and college grantee organizations:

- **Recipients of NIH grants have full responsibility for their scientific data.**
- **This extends to anticipating and reacting to events such as Y2K, which may affect results from electronic devices and other laboratory equipment containing embedded date functions.**
- **NIH grantees must take necessary steps to mitigate potential problems such as inaccurate data that could affect research results.**

For a copy of the memo, contact the Massachusetts Society for Medical Research office at (978) 251-1556 or visit the NIH Year 2000 site at <http://www.nih.gov/grants/era/era.htm>

Online Y2K Vendor Compliance Databases

- **Chime** (<http://www.chime.org/y2k>) requires a password and provides info on specific manufacturers' compliance. You can search by manufacturer and then inquire on compliance, equipment and contact.
- **Compliance Database** (<http://www.y2k.gov.au/biomed>) provides specific information by manufacturer, description, or model.
- **EDS Vendor 2000 Database** (http://www.eds.com/general/cio_services/offerings/cio_services_offerings_vendor2000.shtml) a compliance database that provides up-to-date information on tens of thousands of products from thousands of suppliers. This database reports which assets are Year 2000-ready and which need to be replaced or upgraded.
- **FDA's Manufacturer Compliance Database** (<http://www.fda.gov/cdrh/yr2000/year2000.html>) a database which provides info on manufacturers NOT in compliance as well as specific info by manufacturer and description.
- **Hewlett Packard Medical Devices Compliance Site** (<http://hp.iwcon.com/mpg-y2k/>)
- **Year 2000 Biomedical Search Engine** (<http://www.billythebot.com>) a search engine that evaluates biomedical sites looking specifically for Y2K compliance information.
- **Federal Y2K Commercial Off-the-Shelf Product Database** (<http://y2k.policyworks.gov>)
- **Year 2000 Status Vendor Product Database** (http://globe.lmi.org/lmi_pbs/y2kproducts/)

Taking the lead in helping employees prepare on a personal level for Y2K glitches is also a proactive measure in ensuring their cooperation in the event of problems with payroll and benefits.

It may also ensure more cooperation and higher morale in the event of increased staffing needs during the millennium transition. Your facility may consider advising staff early on that overtime and on-call services may be scheduled and expected during a period of time beginning December 31, 1999. One innovative Massachusetts facility is even considering hosting a millennium New Year's Eve party on-site to ensure availability of staff.

All staff must be involved in preparing for Y2K, as with any impending crisis. That means management must take the lead to get procedures and training in place. Training of course is critical. You may consider accelerating staff learning curves by adding more tasks and intensive training now, and drilling periodically on critical scenarios so procedures are rote when they are actually needed.

Transportation may also be an issue. Some have predicted that many automobiles and other vehicles will experience Y2K-related problems. As part of employee awareness efforts, the issue of alternative transportation should be raised. Employees should be responsible for assessing the compliance status of their own vehicles and scheduling transportation alternatives should the need arise.

Y2K & the Institutional Disaster Plan

Even the most optimistic Y2K experts will tell you there will be disruptions due to the millennium bug. Many of us have already experienced minor inconveniences like credit card rejections due to a year 2000 expiration date. The severity of the crisis will depend in large part on how our institutions work to fix

predictable problems ahead of time, and plan for crises generated by situations that are out of direct institutional control (e.g., failure of utilities). Since we know the millennium date change will bring with it at least some of the problems already discussed, we might look at it as an opportunity to hone our disaster planning and recovery efforts now so that we are more fully prepared for future disasters we cannot so easily predict.

A first step might be to ascertain whether your institution has a Y2K Project Team, get to know the individuals on the team, and be sure your facility's or department's needs are represented.

Expecting to fall back on an existing Disaster Recovery Plan (DRP) may not place you in a good position as the millennium turns over. The bulk of existing DRPs consist in recreating existing technology at another site, but do not take into account that the technology itself may fail. In addition, conventional disaster recovery and emergency planning assume a single, large event of unpredictable timing. The Y2K crisis, the timing of which is more or less known, is more likely to involve many little things going wrong, with effects that gradually accumulate. Planning for strategic action needs to be started quickly, since many issues may require the next 12 months to resolve.

While you should use existing DRPs to help determine your priorities, Y2K contingency plans must contain methods for doing things manually that are currently automated. Now would be a good time to explore cross-facility availability of space and services within your institution, as well as to negotiate arrangements for possible cooperation between institutions for needed supplies, staff and services. Advanced coordination with emergency management, police and fire personnel is highly recommended.

Public relations (PR) considerations for Y2K are standard operating procedure for crisis situations. The goal of course is to

reassure the public through the media that your institution is in control of the situation and that resolution of the crisis is being handled in an organized and timely manner. As with any crisis, the appropriate person(s) should respond to every media inquiry, and do so promptly to avoid misunderstandings that may make their way to the public. Media statements and other press information should be prepared ahead of time for executive management and marketing/PR departments. The banking industry has been working on the Year 2000 problem for nearly a decade and has generated proactive media and consumer educational Y2K print and video resources; you may want to check with local banks for copies of their Y2K customer information materials.

Legal & Insurance Issues

No one knows for sure what will happen when clocks change to January 1, 2000, except for this — anyone with a Y2K problem will want to blame it on someone ELSE. Peter de Jager, a respected Y2K expert, has described the Year 2000 problem as a lawyer's dream — "better than an asbestos-filled cigarette." Y2K is indeed a potential class action nightmare, and legal precedents are already being set. One estimate predicts that Y2K-related litigation in the U.S. alone will top \$1 trillion. The U.S. Chamber of Commerce has proposed that Congress create a new Federal court modeled after bankruptcy court to handle what is expected to be a flood of Y2K lawsuits.

A great deal of litigation is expected to surface within the healthcare and medical device industries. This is further incentive to inventory and test biomedical equipment and medical devices at your institution or outsource the testing process to experienced consultants. Institutions also have statutory exposure with regard to tax reporting and payment obligations, pensions/401K plans, etc.

The general expectation is that insurers will adopt exclusivity language to rule out coverage for Y2K problems. It is recommended that you investigate the insurance coverage you can expect for your institution.

Government Readiness

In February 1998, President Clinton issued an executive order mandating Y2K compliance by all Federal agencies. Nevertheless, compliance information has been difficult to come by, and several General Accounting Office reports suggest many Federal agencies face significant challenges in their Y2K compliance efforts. In June 1998, the Office of Management and Budget directed all Federal agencies of concern, including the Departments of Agriculture and Health and Human Services, to submit monthly progress reports. In September, Vice President Gore met with senior officials at these and other agencies to help them prioritize their Y2K efforts, and in October, the U.S. House of Representatives voted 407-3 to authorize the President's Council on Y2K Conversion to take control of computer systems of critical agencies that are unlikely to avert a crisis because of the Y2K problem.

The Federal Emergency Management Agency (FEMA) has completed an assessment of Y2K preparedness in the emergency services sector and the results can be found online at <http://www.fema.gov/nwz98/y2k1216.htm> and <http://www.fema.gov/y2k/rpt1216.htm>. FEMA will be conducting regional Y2K preparedness workshops for state and local emergency managers, state fire marshals, state Y2K coordina-

tors, and others throughout February and March 1999. For more information, contact FEMA at eipa@fema.gov

States are spending more than \$3.5 billion to bring their critical systems to compliance, but many of the nation's local governments, police departments, and fire departments have done nothing to get ready. An ongoing survey of state readiness conducted by the National Association of State Information Resource Executives indicates that only a narrow majority of states have completed remediation projects on more than half their critical systems. The majority of states are way behind, with Alaska in last place with only 15% of its computer systems repaired.

State governments are working overtime to indemnify themselves against lawsuits arising from computer system failures engendered by the Y2K problem. Nevada, Florida, Georgia and Virginia have already enacted legislation barring Y2K lawsuits against their state governments, and similar legislation is under consideration in New York, California, Illinois, and a handful of other states.

A recent survey by the National Association of Counties shows that one-third of the nation's counties aren't even aware of the Y2K problem—and about 75% of the 119 counties with populations below 10,000 have not developed a plan for updating their computer systems to deal with the millennial data change. Total Y2K spending among counties is expected to reach \$1.7 billion, according to the association.

Compliance information about U.S. cities and towns is no more encouraging. A recent survey found that 54% of New York State's towns, 48% of its villages, and 26% of its cities have not made plans for Y2K compliance. A similar survey in California found that overall 42% of California cities, counties, and special districts have no funds budgeted to deal with the problem.

Summary

The bright spot in the Year 2000 situation for those of us in North America is our time zone relative to Asia, Europe, and Africa. Whatever does happen as the millennium turns over will happen first in the Pacific, then New Zealand/Australia, Japan and the rest of Asia. Europe and Africa will have up to 6 hours warning, and we in the Americas several more. You may want to set up news sources in Asia for New Year's Eve next year, even possibly setting up an e-mail contact that would be willing to correspond during that time, to decide what contingency plans already in place might need to be implemented.

Whether your instincts side with the optimistic or the most pessimistic Y2K experts, responsible institutions must hope for the best while planning for the worst-case scenario. The sidebar summary on Y2K planning for animal research facilities may assist you in prioritizing your contingency planning efforts. The recovery assessment checklist may also be helpful. The MSMR continues to track Y2K-related issues and can serve as a resource for its members on planning for Y2K, promoting Y2K awareness and its consequences for animal care and the conduct of research, assisting with security preparations, and serving as a Y2K clearinghouse for new information. We hope to play a supportive role for our member institutions to help ensure as smooth a transition as possible into the Year 2000 and beyond. ■

Animal Welfare Issues: Swine

by

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Introduction

Issues of animal welfare and animal rights are concerns now facing the pork industry. People who raise animals, whether for meat production, companionship, recreation, or other purposes, have a responsibility to sustain the basic welfare of their charges. Modern domesticated and confined animals depend completely upon their caretakers for their nutritional, environmental, and social needs. This is true whether the animals are raised in a pasture system (extensive production) or in an indoor unit without access to soil or grass (intensive production).

Discussion

Assessment of Welfare

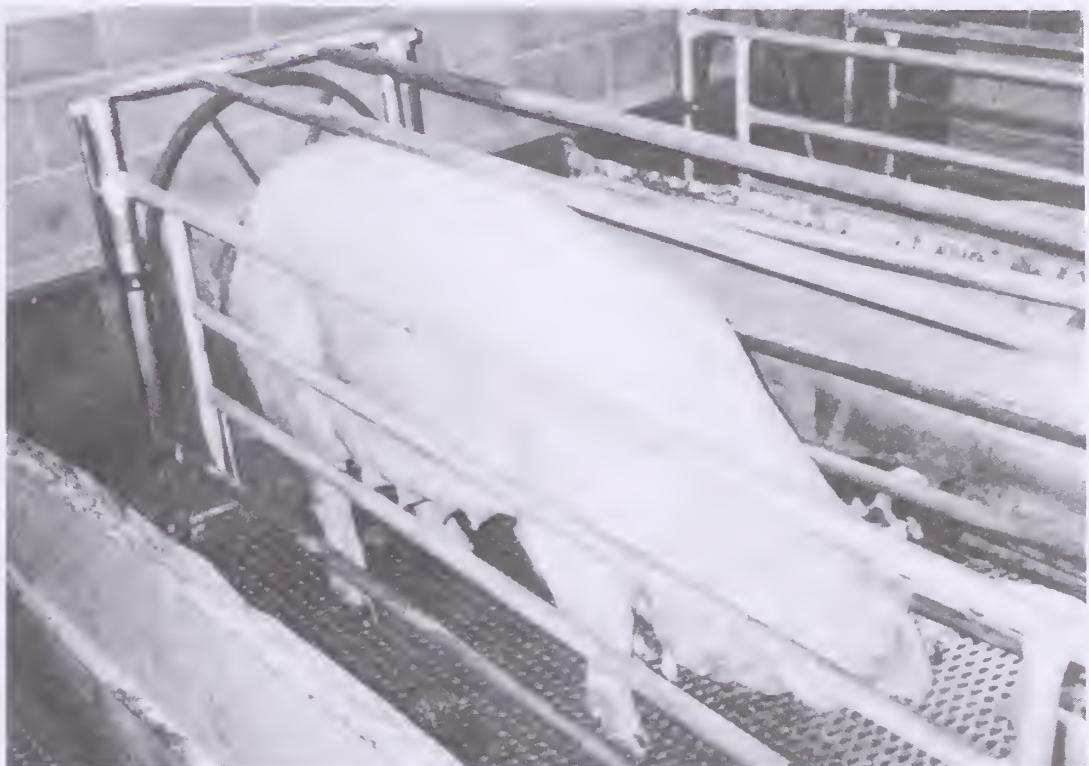
Assessment of animal welfare is difficult. The British Farm Animal Welfare Committee, referenced by Muirhead (1), noted: "There are few positive methods of assessing the well-being and contentment of animals; we must not assume that animals' feelings and reactions are the same as those of human beings. It is clear that a healthy and well-fed animal will not necessarily be a happy, stress-free animal and there are a few positive indicators to evaluate with any accuracy the degree of stress; there is also evidence that some stress is necessary for the animal's well-being." Productivity may not be the best measurement of well-being, but it must be considered as one measure in a battery of measures until more reliable indicators are found. Important measures of welfare include behavior and physiology.

Pork producers have a profound interest in the well-being of their charges. Pig performance and welfare have significant impacts on the success and profitability of the pork production operation. Swine kept in less than ideal conditions have impaired growth rates, reduced efficiency of feed utilization, and low reproductive performance. Stressed pigs show signs of immunosuppression and, therefore, greater disease incidence. They often show behavioral changes, which may differ from one stressful environment to another. Cold-stressed young pigs, for example, show poorer feed efficiency and greater likelihood of respiratory and enteric disease, and they shiver and huddle in a characteristic manner.

Each production practice adopted by producers is intended to optimize economics and to be suitable to the pig's biological needs. Pork producers try to meet or exceed these biological requirements in the most cost-effective manner. Both facility de-

sign and management practices make the most of the available alternatives. When some discomfort must be imposed, the benefit is less overall pain or discomfort. Thus, one animal may have its movement restricted to save the lives of others (as in the farrowing crate where the sow's movement is limited to prevent baby pigs from being crushed).

Extensive pork production cannot by definition be more pig friendly or less stressful. Some stressors, such as predators and parasites, affect pigs negatively when encountered during extensive production. Many scientists and pork industry leaders conclude that the stresses of even well-managed extensive pork



Swine in traditional indoor farrowing pen.

production typically exceed the stresses of well-managed intensive production systems. Others have shown overall economic benefits to the use of extensive systems.

Animal welfare concerns about pork industry practices include two areas:

- Standard practices that are thought to be painful (for example, castration).
- The quantity or quality of space provided to pigs in some housing or penning systems.

Several research laboratories in the United States are initiating projects in swine welfare and behavior. Currently, most projects deal with sow housing during gestation and lactation using newer housing or penning systems. Other projects seek to

better understand how pigs perceive their environment through cognitive processes.

Current Production Practices—Standard Procedures

Several common practices that are considered to cause some pain are regularly performed on newborn pigs by pork producers. Examples include ear notching and tagging, teeth clipping, tail docking, and castration. Pork producers perform these standard practices because they believe each procedure will help the animals and prevent more pain and suffering later in their lives.

Ear notching is typically performed near the time of birth, and the pain is considered to be minimal. If each animal has an individual identification, it can be better treated when it becomes ill and its progress (in terms of growth and reproduction) can be tracked. Ear tags can also be used (much like piercing ears) to provide an identification number, but they have the potential disadvantage of falling off. New technology is being developed to implant (under the skin) an electronic identification device that can be read by a computer scanner.

Piglets are born with eight sharp "needle" teeth. Needle teeth are probably used by pigs in the wild to defend against predators. Piglets (domestic or wild) generally use their needle teeth to establish dominance. In so doing, they wound littermate piglets and may tear the sow's udder during suckling. Pork producers use a clean clipper for individual piglets to take the sharp edge off the tip of the needle teeth. The procedure is performed shortly after birth, and the brief discomfort experienced by piglets is much less than might be experienced by sows with shredded udders.

Adult or immature pigs occasionally show an abnormal behavior called tail biting or cannibalism. When a tail biting episode begins, the vice usually spreads quickly in the affected pen and throughout the neighboring pens. The tail has a rich blood supply, and the bleeding tail of the bitten pig stimulates pen mates to further chew the wounded tail. Pigs sometimes bleed to death; in other cases, aggressive penmates chew the tail down to the spinal cord and cause infection, illness, and possibly death. Docking tails soon after birth substantially reduces the incidence of tail biting. Pigs may cannibalize whether they are housed inside or on dirt lots, and the practice occurs with widely different stocking densities. An outbreak of tail biting is expected to be very painful for the pigs with bitten tails. The small amount of discomfort caused by docking is much less overall than what would be experienced by pigs during an outbreak of tail biting.

Male pigs are usually castrated within the first 3 to 14 days after birth. New pork industry swine care recommendations (2) suggest that boars be castrated at 2 weeks of age or younger. If males more than 8 weeks old must be castrated, the industry recommends use of anesthetics to reduce the pain. Most adult male pigs develop a characteristic off-flavor and odor that has been termed "boar odor," which consumers find highly objectionable. Castration substantially eliminates the occurrence of

this odor. At market time, pork producers receive much less compensation for boars than for castrated males (barrows). In a recent demonstration project, boars had only two-thirds the market value of barrows (3).

Current Production Practices

Space

Pigs in modern pork production systems are more likely to be found inside buildings than in the more extensive pastoral setting. The move towards indoor systems has probably enhanced pig welfare. Pigs housed inside buildings are generally exposed to a more constant and comfortable temperature, drier, and freer from parasites. Overall animal care is often better when animals are more easily handled. However, well-designed and managed extensive systems also promote acceptable animal welfare.

Much research has been conducted on the subject of crowding. Crowding leads to reduced feed intake, slower weight gain, and increased disease incidence. More basic studies have shown that crowding causes elevated stress hormones



Swine in outdoor environment.

and increases aggressive behavior. Therefore, there are both economic and animal welfare reasons for maintaining lower population density.

Space needs for adult sows and boars are less well understood. Adult pigs are typically fed a limited amount of feed, since overfeeding leads to fat animals with lower reproductive success. To maintain normal, lean body weights, sows and boars are fed about one-third of the calories they would eat if given free access to feed.

Adult pigs have very strong social relationships, with one animal having clear dominance over subordinate pigs. Dominant sows that are hungry will steal feed from sows of lower social rank. Sows housed in groups have a greater chance of injuries caused by various aggressive behaviors (for example, vulva

biting (4)). To prevent problems associated with group housing, sows are provided individual feeding stalls or are penned in individual gestation stalls. Individual housing of sows in gestation stalls eliminates the pressures of social stress that group-housed sows experience. Record-keeping services (with records on tens of thousands of sows) and controlled studies generally support the idea that penning sows in gestation stalls increases their reproductive performance. Clearly, some genetic strains of swine are more adaptable to indoor housing.

Since stress has dramatic negative effects on reproduction, it is possible that the stress of individual penning is less than the stress of being a submissive sow in a social group. Further study is needed to understand fully the physiology and behavior of sows in individual and group housing systems. An abrupt industry move to certain types of group housing systems for sows could lead to reduced sow welfare.

Alternative Practices

Extensive swine production is an economical component of production in the United States. Land and labor requirements are greater, but this is a viable system for producers with low capital resources. On a per-head basis, extensive systems are as profitable as indoor production, but the net profit of the unit will be less because of smaller volume and less consistent production.

Sows farrowing on pasture in portable houses weaned 0.8 fewer pigs per litter (5) than confined sows and have higher death losses in wet, cold weather. Sows farrowing in pens and turned out to feed and water wean as many or more pigs than sows maintained in a stall for the lactation period. They get more exercise and eat more feed. More time is required to turn sows in and out and to remove soiled bedding.

Research studies must determine which practices are stressful and if those stressors are detrimental. For example, data suggest that individually stalled sows are more productive than group-housed sows, based on productivity and longevity in the herd. Stockmanship also affects stress and performance. Researchers observed a positive relationship between pigs/sow/year and sows that were "at ease" with human caretakers (6). In mild seasons, pigs raised outdoors grow as well as or better than confined pigs. In hot and cold seasons, pigs grow faster indoors.

New housing, penning, and management practices are being developed. Before these new systems are introduced into pork production units, we must be sure they provide animal well-being that is equal to or better than the systems they replace.

Glossary

Barrow — Male pig castrated before sexual maturity.

Boar — Intact (not castrated) male pig.

Gilt — Female pig of any age prior to second pregnancy.

Pig — Young swine of either sex.

Piglet — Baby pig.

Sow — Female swine having produced one or more litters.

Castration — Removal of testes.

Farrow — To give birth to a litter of pigs.

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Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching

The Federation of Animal Science Societies (FASS) is pleased to announce the completion of the first revised edition of the *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching*. The first edition of the guide was published in 1988 and was developed as a voluntary guide for agricultural researchers, instructors, and technicians. In the past 10 years, the guide has served as a primary reference on the care and use of major agricultural animal species in the United States in research and teaching that must be conducted in simulated or actual agricultural production settings. The first revised edition, published by FASS, has resulted from a complete and deliberate update of the original guide, although the overall purpose and format of the original work remain the same.

The cost of the 150-page reference is \$10 (postage and handling included), and copies can be ordered through FASS at 1111 North Dunlap Avenue, Savoy, IL 61874, tel: (217) 356-3182, fax: (217) 398-4119, e-mail:fass@assochq.org

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International News...

United Kingdom Home Office

Press Release 452/98
16 November 1998

Government Announces End to Cosmetic Testing on Animals

The Government has secured an end to the testing of cosmetic ingredients on animals, Home Office Minister George Howarth announced today.

Following consultation with industry, UK companies with authority to carry out such tests have agreed to voluntarily give up their existing licences. The Home Office will not issue any further licences. The move comes a year after the Government's announcement of an end to the use of animals in the UK for the testing of finished cosmetics products.

Mr. Howarth said, "The Government has met its pledge to end cosmetic testing. Ongoing dialogue between the Government and the cosmetics industry has now secured a voluntary ban on all use of animals for the testing of cosmetics in the UK. Current legislation did not allow a revocation of the licences, and so a voluntary agreement was the most logical way forward. We are not intending to issue any further licences. These measures will further improve the operation of the Animals (Scientific Procedures) Act 1986."

All applications for animal testing are dealt with on an individual basis and, before any tests can go ahead, the following criteria must be satisfied:

- there are no alternatives;
- any suffering to animals is outweighed by the potential benefit to humans; and
- the minimum suffering is caused to the smallest number of animals.

The vast majority of procedures are done for medical or biological research reasons.

George Howarth said, "Decisions to grant licences for any animal use are scrutinized rigorously and only taken after careful consideration. However, until alternative tests are available, animal testing is necessary to both ensure the safety of products and enable future advances in medicine."

The move follows a range of initiatives by the Government since May 1997, including:

- Promoting the development and use of alternatives wherever possible;
- the budget made available to the Animal Procedures Committee to sponsor research on alternatives has been increased by 42% and scientists will now be required to demonstrate what consideration they have given to the use of alternatives;
- an end to the testing of finished cosmetic products on animals;
- a ban on the use of animals to test tobacco or alcohol products;
- further funding secured to increase the complement of the Inspectorate from 18 to 21, and seven new inspectors have been recruited since May 97;
- through the European Commission, we are putting pressure on the Organisation for Economic Cooperation and Development to delete the LD50 test from its list of regulatory safety tests;
- requiring ethical review processes in all establishments from April 1999;
- a ban on the use of Great Apes (gorillas, chimpanzees, pygmy chimpanzees and orangutans);
- the phasing out of the use of ascitic animals in monoclonal antibody production; and
- an increase in the number of animal welfare experts on the Animal Procedures Committee. ■

European Union (EU) Set to Take Welfare Stand on Foie Gras

[Foie gras is a traditional Christmas food,] but fattening the goose to make foie gras is harmful to the birds' welfare, according to a report from EU animal health scientists.

"Force feeding as currently practiced is detrimental to the welfare of the birds," says the report from the Scientific Committee on Animal Health. The study takes a jaundiced view of the practice of force-feeding ducks and geese through tubes twice daily in order to enlarge the bird's liver by up to 10 times its normal size.

The European Commission is not obliged to take up the Committee's advice, but it could choose to introduce legislation citing the report as support for a ban. Nevertheless, opposition from the three countries where foie gras is produced (France, Spain, and Belgium) to any proposed legislation could be immense.

"Unacceptable suffering"

The 'Eurogroup for Animal Welfare' on Tuesday welcomed the report, saying that the production system causes "unacceptable suffering." But the organization's director David Wilkins said that "because of the opposition of producing countries," the formulation of a ban on the practice "will take time." However, the scientists' report describes a complete ban as an "extreme" solution. ■

Understanding USDA's AWA Policies, Particularly No. 12

By

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In May 1997, the Animal Care division of the U.S. Department of Agriculture's Animal and Plant Health Inspection Service published a booklet of internal policy memoranda. This publication has led to several discussions about the content of these policies and raised questions about their scope and legal authority. This article attempts to clarify these issues and provide specific explanation of policy No.12, "Written Narrative for Alternatives to Painful Procedures."

What Is a Policy?

The U.S. Supreme Court has made clear that the notice and comment procedures associated with typical rulemaking procedures in the Federal Government are essential to establish the legally binding effect of regulations. At the same time, the Court has given broad latitude to agencies of the Executive Branch to interpret their own statutes and regulations.

While such "interpretive rules" do not have the legally binding effect of regulations and are subject to legal challenge, the Courts usually give deference to an agency's interpretation of its own rules. Accordingly, from a legal perspective, most of the policies contained in the *Animal Care Policies* booklet are more accurately termed "interpretive rules" since they are statements that clarify or interpret the existing Animal Welfare Act (AWA) regulations. It is only because of convention within our agency that we refer to all such documents generically as "policies."

Through our policies, we seek to promote uniform application of the regulations based on our knowledge of the intent of the regulations and on the statute on which those regulations are based. While the policies are primarily designed to assist our own Animal Care inspectors, all of you in the regulated community clearly have an inherent interest and stake in our interpretation of the regulations.

A Closer Look at Policy No. 12

Before proceeding, I should note that not all of our policies are interpretive rules. Some merely lay out procedures for implementing the existing statutes and regulations. For example, policy No. 17, "Annual Report for Research Facilities," is a general policy that merely explains the procedures to be followed to generate the annual report to Congress regarding accomplishments under the AWA. The policy does not offer an interpretation of our existing rules.

In contrast, policy No. 12, "Written Narrative for Alternatives to Painful Procedures," is clearly an interpretive rule that is intended to provide our inspectors—and you—a better understanding of what we believe constitutes adequate documentation of a good faith search for alternatives. This rule is

based on the AWA statute that seeks to minimize or avoid discomfort, distress, and pain caused to animals during experimentation.

Policy No. 12 includes the expectation that the principal investigator (PI) will not stop searching simply because he or she is unable to find a nonanimal model. Rather, we would expect the concepts of refinement and reduction to be applied whenever and wherever possible in order to minimize animal pain and distress when it cannot be eliminated. While Congress did not intend to eliminate animals in research, they clearly intended to minimize pain and distress, a fact that is especially evident in the 1985 amendments to the AWA.

The AWA and regulations make the Institutional Animal Care and Use Committee (IACUC) responsible for ensuring that the PI has made a good faith effort in conducting his/her search for alternatives. Accordingly, we place the burden on the IACUC to gather sufficient information to make that determination. As set forth in Policy No. 12, if the PI uses an electronic literature search as the basis for making the required assurance, then the date of the search, the source(s), keywords, and date range will provide the IACUC with the requisite information.

This policy does not, however, rule out other means of conducting a search. We recognize that, in some unique circumstances, there can be a better method of conducting the search and giving the IACUC the assurance it needs. That is why the policy allows the PI to provide an alternate search strategy that describes the "methods and sources used to determine that no alternatives were available to the painful or distressful procedure."

Final Thoughts

Our intention in developing Policy No. 12—and other policies—is to provide clear and consistent guidelines so that all of our licensees and registrants are held to the same standards. While we try to avoid being too prescriptive, there is also a compelling need for consistent interpretation and enforcement of the regulations.

Nowhere is this more evident than with the issue of documenting searches for alternatives to painful procedures. We believe Policy No. 12 is necessary to ensure uniformity among AC inspectors and provide a clear understanding of our expectations to the biomedical research community. Although it met with negative reaction when it was initially implemented, we are pleased that there now seems to be general support for the content of this policy. ■

Innovative Enforcement:

How USDA Has Used New Tools and Techniques To Improve its Administration of the Animal Welfare Act

Effective enforcement of the Animal Welfare Act (AWA) is critical to the health and welfare of animals used in research and exhibition, transported in commerce, and sold as pets at the wholesale level. APHIS takes its responsibility to uphold and enforce this law very seriously.

Over the past 3 years, APHIS has used a new and innovative strategy to improve enforcement of the AWA. This strategy has not only improved conditions for animals protected under the law. It has also resulted in a reduction in the time it takes to bring cases to resolution and extensive savings for U.S. taxpayers by avoiding excessive litigation. This report details the new strategy and its successes.

APHIS' New Enforcement Strategy: Innovative Settlements and Stringent Sanctions

The philosophy behind APHIS' new enforcement strategy is simple: Work with those individuals who show an interest in improving the conditions for their animals and get tough on those (a.k.a. "the bad actors") that continue to show disregard for the law and the well-being of their animals.

For the former, APHIS' Animal Care (AC) and Investigative and Enforcement Services (IES) staffs and USDA's Office of the General Counsel (OGC) actively pursue innovative penalties that allow the individuals to invest part or all of their fines in facility improvements, employee training, and other initiatives aimed at improving the conditions for animals. In doing so, USDA enables the individuals to immediately provide better care for their animals while sending a clear message that future violations will not be tolerated. In the past, most such fines were either suspended or paid directly to the U.S. Treasury, but neither of those results directly improved the plight of the violators' animals.

On the other hand, for licensees and registrants who do not improve the conditions for their animals or whose animals suffer or die due to neglect, AC, IES, and OGC move swiftly and pursue stringent enforcement action. Such action typically includes significant monetary penalties and/or license suspensions or revocations. It may also include confiscation of their animals and relocation to another facility if the animals are found to be suffering.

APHIS' strategy focuses on making the welfare of the animals the top priority in all enforcement actions. The examples below highlight cases that illustrate both components of APHIS' new enforcement strategy.

Innovative Penalty Highlights

In February 1997, APHIS settled a case with a large research facility for \$30,000. Of this, \$20,000 was required to be used for facility improvements and employee training. AC

had cited these areas as being in need of improvement to achieve AWA compliance.

In March 1998, APHIS settled a case with a licensee whose circus elephants contracted tuberculosis for a \$60,000 settlement and a 45-day license suspension. Of the \$60,000, \$30,000 went towards testing and treating the infected elephants, and \$30,000 was donated to a foundation to conduct research in the diagnosis and treatment of elephant tuberculosis.

In April 1998, APHIS settled a case against a research facility charged with violations pertaining to the handling of animals and protocol review procedures for \$50,000. Of that amount, \$20,000 must be donated to an APHIS-approved non-profit organization that promotes or develops alternatives to animal testing, \$20,000 must be spent on improving housing facilities, and \$10,000 is payable to the Treasurer of the United States. The lab must also contract with an outside consultant to review its animal care program.

In April and September 1998, two airlines settled charges involving several cases of animal death and illness aboard flights around the country. In both settlements, each airline agreed to donate \$25,000 to an APHIS-approved organization to study methods to promote the safe and humane handling of animals during transportation. The results of this research will be disseminated to all carriers registered under the AWA.

In July 1998, AC settled a case against a circus pertaining to the death of a baby elephant. Under the settlement, the circus agreed to donate \$10,000 to a nonprofit elephant sanctuary and \$10,000 to an outside organization for research relating to gastrointestinal or infectious diseases of elephants. Both the sanctuary and the research organization must be approved by APHIS. The circus also agreed to enhance its training programs for animal handlers.

In November 1998, AC settled a case with a zoo involving several charges related to the care and handling of its animals. Under the settlement, the zoo agreed to hire one or more APHIS-approved consultants with recognized expertise in zoo management. These consultants, working with APHIS and zoo officials, will develop and implement a quality and compliance assurance program to ensure the safety and well-being of the zoo's animals. Under the agreement, the zoo must spend at least \$25,000 on development of this program.

Stringent Sanction Highlights

In September 1997, APHIS' case against a class B animal dealer for more than 1,500 AWA recordkeeping violations came to an end with a permanent revocation of the dealer's license and a \$175,000 fine to be paid in full. The dealer had been charged with, among other things, selling

dogs and cats to research facilities under falsified documents and maintaining false acquisition records for dogs.

In a case still pending, APHIS has obtained a permanent revocation of an exhibitor's license and a \$200,000 civil penalty for alleged AWA violations pertaining to the movement of elephants and llamas across the southwestern United States in the summer of 1997. The movement of the animals resulted in several animals suffering and the death of one of the elephants.

The case is significant not only in terms of penalties sought but also in the manner in which it was handled. By making this case a top priority, APHIS was able to complete its investigation and file formal charges within 3 weeks, whereas this process typically takes several months. APHIS was also able to obtain an administrative hearing within 2 months, a process that normally takes more than a year. At this time, the case is under appeal to the U.S. Court of Appeals. However, the circus, in effect, closed down following the decision against it in October 1997.

Ensuring Collection of Penalties

Regardless of whether innovative settlements or stringent sanctions are pursued, APHIS has committed itself to improving its system for collecting civil penalties. Toward this end, APHIS has used programs in other federal departments and worked with the Internal Revenue Service to collect fines from individuals who refuse to pay. APHIS' specific collection measures include using private collection agencies, offsets of tax returns through the IRS, civil suits through the Department of Justice, and specific collection programs through the Department of Treasury.

The examples below highlight APHIS' efforts to ensure payment of civil penalties.

For several cases that required civil penalties of \$5,000 to \$10,000, APHIS referred the unpaid debt to the IRS for collection. In 1997, the IRS withheld up to 100 percent of the 1997 tax return for those individuals. APHIS also requested that two of the individuals who were retired military personnel have their retirement pension offset to cover the debt. In turn, these individuals' pensions were offset by the amount of the debt.

APHIS referred several cases to the Department of Justice (DOJ) to collect debts. One notable case concerned one of the worst violators in the history of the AWA whose case was sent to DOJ in 1996 after the individual's debt of \$26,500 went unpaid for 4 years. In turn, DOJ issued a complaint. When the man refused to answer, he was arrested for failing to appear at his hearing and was assessed the entire amount as a lien against his property, with USDA as a secured creditor. Justice is following up with another hearing to examine his financial status (a debtor examination).

The Bottom Line: The Numbers on APHIS' AWA Enforcement Efforts

From 1995 to the present, APHIS has assessed almost \$2.3 million in AWA sanctions. [Ed. Note: Due to its size, detailed data on APHIS' innovative enforcement efforts over the past 3 years, while available, is not included with this report. AC will mail you a copy on request. Requests can be placed via e-mail () or telephone (301-734-7833).] These penalties have been assessed as direct cash payments to the U.S. Treasury, renovations to facilities and improvements in conditions for animals, mandatory training for employees who handle animals, funding for sanctuaries and research to improve animal health and welfare, and suspended fines to prevent future violations of the AWA. In specific, the following amounts have been imposed:

- Total civil penalties assessed in settlements—\$2,295,500.
- Civil penalties used to renovate facilities or for training—\$288,500.
- Civil penalties paid as cash—\$573,875.
- Total amount assessed as an innovative use of the payment—\$1,462,000

APHIS' has also focused on closing facilities that neglect the condition of their animals. As part of this effort, APHIS has adopted a policy that allows individuals to voluntarily give up their licenses in lieu of paying the entire amount of an assessed fine. This enforcement tool has eliminated many facilities with substandard conditions and/or those who are reluctant to comply with the regulations. In specific, APHIS has taken the following enforcement actions over the past 3 years:

- Total settlements (consent decisions) from 1995 to present—151.
- Settlements with suspensions of the license—96.
- Settlements with a voluntary permanent disqualification—21.
- Settlements with a license suspension of 1-20 years—35.

As noted, APHIS has progressively sought over the past 3 years to allow monetary penalties to be used for innovative purposes, with increased emphasis placed on such penalties in fiscal year 1998. These purposes include facility improvements, employee training, and research that promotes better overall animal health and welfare. As part of APHIS' overall enforcement efforts, the agency pursued innovative penalties as follows:

- Require facility improvements (30 percent of the settlements).
- Require individuals to give up animals that they were not equipped to handle (9 percent).
- Require individuals to employ specialists, more employees, or veterinary consultants (5 percent).
- Require training of employees that handle animals (7 percent).

The Bottom Line 2: Reduction in the Time It Takes To Resolve Cases

A key component in ensuring adequate protection for animals covered under the AWA is bringing cases to resolution in a timely manner. Swift resolution ensures that either the conditions are improved for the animals or the violators are duly punished for not providing proper care. In either case, the welfare of the animals is addressed through timely enforcement action.

The figures below show that, during the past 3 years, APHIS has significantly reduced the time it takes to complete various parts of the enforcement process, particularly the time it takes to bring cases to resolution. (In 1996, the times increased because of a backlog of cases that had amassed prior to 1995. Once these cases were resolved, the numbers dropped significantly in 1997 and 1998.)

Number of days from request for formal prosecution to issuing complaint		Number of days from issuing complaint to final action		Number of days from formal prosecution to taking final action (resolving cases)	
1995	502	1995	118	1995	620
1996	337	1996	318	1996	655
1997	220	1997	247	1997	467
1998	175	1998	107	1998	282

The Bottom Line 3: Savings for U.S. Taxpayers

An important benefit to APHIS' new AWA enforcement strategy has been increased savings for U.S. taxpayers. In line with the Reinventing Government mantra of doing more with less and focusing on results, APHIS' strategy has significantly improved the plight of animals protected under the law while reducing the costs of enforcement. This was accomplished through settling certain cases (those where individuals expressed an interest in improving the health and welfare of their animals) prior to a formal hearing before an administrative law judge.

The figures on the next page estimate these cost savings. It is worth noting that the figures are actually very conservative. They assume that all of the settled cases would have been resolved at the hearing before the administrative law judge when, in fact, many law judge decisions are appealed. If the litigation costs associated with appeals were included, the estimates would increase significantly.

Cost Savings for U.S. Taxpayers From Avoiding Administrative Hearings

- For a Single Case—\$9,820
- For the 151 Cases settled from 1995-1998—\$1,482,820

Conclusion

Effective enforcement of the AWA is critical to the health and welfare of animals used in research and exhibition, transported in commerce, and sold as pets at the wholesale level. APHIS takes its responsibility to uphold and enforce this law very seriously. Over the past three years, APHIS has been committed to a new enforcement strategy that has improved the welfare for animals covered under the law while saving money for U.S. taxpayers. ■

APHIS Notice on Farm Animals in Research

Federal Register

Vol. 64, No. 41

Wednesday, March 3, 1999

The full Federal Register notice is available via http://www.access.gpo.gov/su_docs/fedreg/a990303c.html

SUMMARY: Regulations promulgated under the Animal Welfare Act contain standards for the humane handling, care, treatment, and transportation of certain animals by dealers, exhibitors, researchers, and other regulated entities. We believe that additional guidance is needed to assist regulated entities in meeting the standards in the regulations as they apply to the handling, care, treatment, and transportation of farm animals used for nonagricultural purposes (primarily research and exhibition). We are considering adopting two existing guides: the *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching*, published by the Federation of American Societies of Food and Animal Science, and the *Guide for the Care and Use of Laboratory Animals*, published by the Institute of Laboratory Animal Resources. The recommendations in these guides represent the most current thinking on appropriate practices for the handling, care, treatment, and transportation of farm animals for nonagricultural purposes.

To obtain a copy of the *Guide for the Care and Use of Laboratory Animals*: Write to National Academy Press, 2101 Constitution Avenue NW., Lock Box 285, Washington, DC 20055, or call toll-free 1-800-624-6242 or 202-334-3313 in the Washington, DC, metropolitan area.

To obtain a copy of the *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching*: Write to Executive Committee, Federation of American Societies of Food Animal Sciences, 111 North Dunlap Avenue, Savoy, IL 61874.

Both guides are also available for inspection in our comment reading room in the USDA South Building and in any Animal Care Regional Office.

FOR FURTHER INFORMATION CONTACT: Dr. Bettye K. Walters, Staff Veterinarian, Animal Care, APHIS, USDA, 4700 River Road Unit 84, Riverdale, MD 20737-1234, tel: (301) 734-7833, or e-mail:

Bettye.k.walters@usda.gov ■

New from the Animal Care Policy Manual

<http://www.aphis.usda.gov/ac/polman>

Policy #26—Regulation of Agricultural Animals—November 17, 1998

References: AWA Section 13, 9 CFR, Part 3, Subpart F

History: Clarifies existing internal policy

Justification: The Animal Welfare Act (AWA) regulations cover farm animals that are used in activities that are regulated by the AWA.

Policy:

Farm animals such as domestic cattle, horses, sheep, swine, and goats that are used for traditional, production agricultural purposes are exempt from coverage by the AWA. Traditional production agricultural purposes include use as food and fiber, for improvement of animal nutrition, breeding, management, or production efficiency, or for improvement of the quality of food or fiber.

Farm animals that are used to manufacture and test veterinary biological products intended for use in the diagnosis, treatment, or prevention of diseases in agricultural animals are, therefore, exempt from U.S. Department of Agriculture's (USDA) regulatory authority under the AWA. USDA considers this use to be agricultural research, thus, not a regulated activity.

Farm animals that are used to test and produce biologicals for nonagricultural or nonproduction animals are covered by Part 3, Subpart F of the regulations. We consider this to be nonagricultural research and testing that is covered by the AWA and the regulations. As such, when farm animals are used to test or manufacture vaccines, bacterins, toxoids, and other related veterinary biologicals that will be used exclusively in nonproduction animals such as dogs and cats and other pet animals, or in both nonproduction, as well as, farm animals, they are regulated and monitored for compliance with the regulations. An example of the latter may include rabies vaccine or other product that has a multi-species label recommendation.

Farm animals that are used as models for human subjects in order to test or manufacture biologicals that will ultimately be used in humans are also regulated. USDA considers this to be biomedical research which is a regulated activity.

Policy #27—Capture Methods of Prairie Dogs—February 23, 1999

References: AWA Section 13, 9 CFR, Part 2, Section 2.131(a)(1)

History: Provides requested guidance.

Justification: Methods used to capture prairie dogs from natural habitats for covered purposes shall be done in a humane manner.

Policy:

As required by Section 13 of the Animal Welfare Act (AWA) and further explained in 9 CFR, Part 2, Section 2.131(a)(1), handling of animals must be done as expeditiously and carefully as possible in a manner that does not cause trauma, overheating, excessive cooling, behavioral stress, physical harm, or unnecessary discomfort. Any method used to capture free-living prairie dogs must be in compliance with this regulation. While it is recognized that any method used to capture wild animals will cause some degree of behavioral stress and discomfort, any method that uses any unnatural means to cause the animals to evacuate their burrows such as vacuum, flooding, or the introduction of noxious gases is a violation of Section 2.131(a)(1) Handling of Animals.

The effective date of this policy is July 1, 1999. ■

that the nature (paper or wood) of the nesting material is less important than its structure, which determines the nestability of the material. The fact that the animals are able to manipulate the materials, thus controlling several aspects of their environment, might be an important factor determining motivation for the preference for this type of enrichment (25).

In a second preference test series, six nest boxes made of different materials were offered as enrichment. The choices of the mice were less uniform as compared to the nesting material preferences. But in general, the mice showed a preference for cages with a nest box made of grid metal or of perforated metal; these materials allow olfactory cues to pass (26).

In order to gain some insight in the strength of preference for these types of enrichment, the most preferred nesting material and the most preferred nest box (from the previous test series) were tested against each other. All mice showed a strong preference for the nesting material. In a next experiment, a choice was offered between nesting material combined with a grid floor, previously found to be avoided (27) and a nest box combined with bedding material. Since no major differences in preferences were found between the sexes in the previous test series, only female mice were tested in this experiment. Even under these circumstances, all mice chose the cage with the nesting material, despite the presence of the grid floor (figure 2). This seems to indicate that the presence of nesting material that can be manipulated is an essential condition for mice in laboratory cages (28).

Preference tests only measure short-term choices of individual animals. Therefore, in a following study, the consequences of providing such enrichments over a longer period to groups of mice were studied. Groups of three male or three female mice of the same two strains (C57BL/6J and BALB/c) were housed under either standard (only bedding) or enriched (bedding and the previously preferred nesting material: paper tissues) conditions for 11 weeks. During this period, several behavioral parameters (two behavioral tests and a handling score) and physiological parameters (food and water intake, body weight, and corticosterone levels) were monitored to determine the impact of the enrichment. All mice used the nesting material to build nests throughout the study.

The main result was that mice from enriched conditions weighed more than mice housed under standard conditions, although the latter consumed more food. This might be due to the fact that nesting material provides good insulation or that the

enriched animals are less stressed. The long-term provision of the nesting material showed no other effects on the physiology or behavior of the mice (29).

These studies led to the conclusion that environmental enrichment may have profound effects on the behavior of mice in their home cage and in behavioral tests. The degree of complexity of the enrichment, however, plays a role in the level of the behavioral and physiological effects. Combining behavioral and physiological parameters provides data that can be used for interpreting the impact of environmental enrichment on the welfare status of an animal. Providing a cage with a preferred nesting material can be a relatively simple method to contribute to the well-being of laboratory mice, without jeopardizing the outcome of experiments. Thus, there seems to be no good reason to deprive laboratory mice of this form of enrichment.

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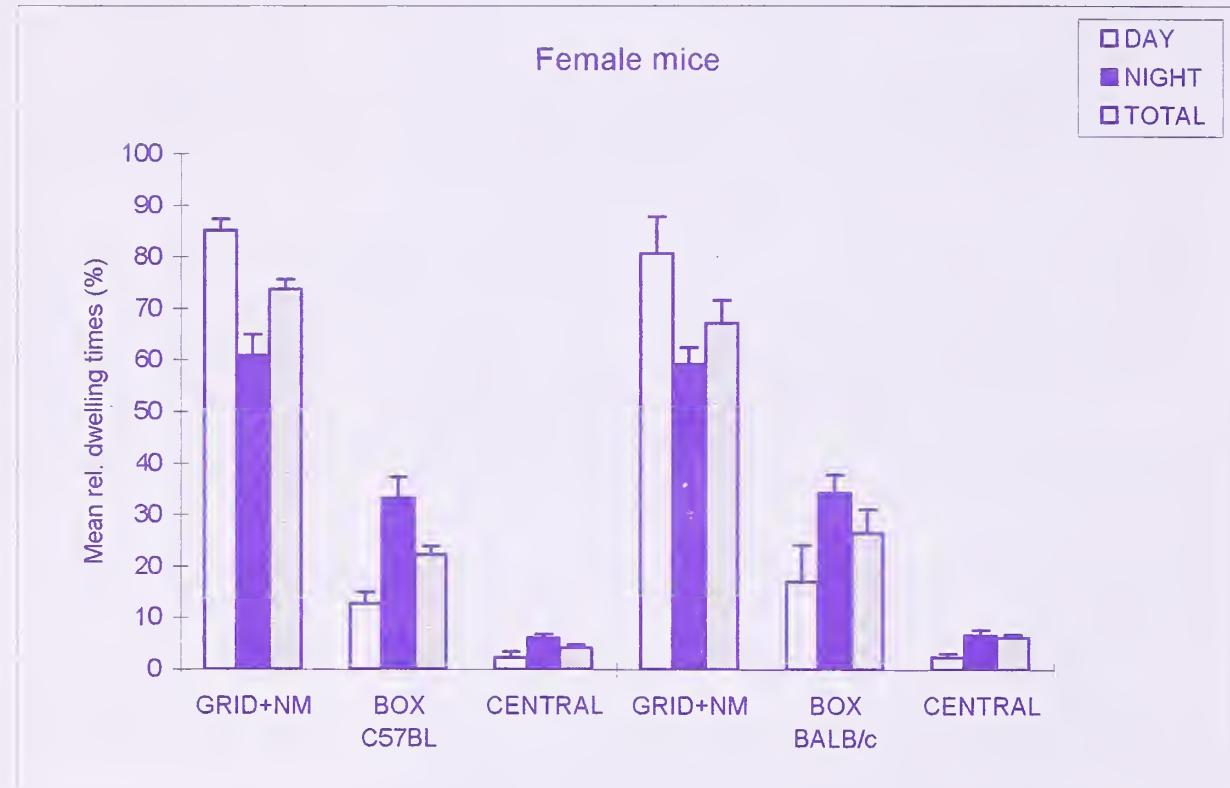


Figure 2. Results of the preference test with nesting material provided on a grid floor and a nest box on bedding material. Mean relative dwelling times (and SEM) per cage for day (=12 h), night (=12 h) and total (=48 h) period, for female mice of two strains (N=24). Preferences for the cage with the nesting material on the grid floor were significant for all mice during all three time periods (all P<0.001).

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Legislation *cont'd from p.1*

be cited as the "Neotropical Migratory Bird Conservation Act."

"The purposes of this Act are the following:

(1) To perpetuate healthy populations of neotropical migratory birds.

(2) To assist in the conservation of neotropical migratory birds by supporting conservation initiatives in the United States, Latin America, and the Caribbean.

(3) To provide financial resources and to foster international cooperation for those initiatives."

- **H.R. 75 To schedule Gamma y-hydroxybutyrate in schedule I of the Controlled Substances Act and to schedule Ketamine in schedule II of such Act and for other purposes.**

Introduced January 6, 1999, by Sheila Jackson-Lee (D-Texas) and referred to the Committee on Commerce, and in addition to the Committee on the Judiciary. Referred to the Subcommittee on Crime on February 25. This Act may be cited as the "Hillary J. Farias Date Rape Prevention Drug Act." Related bill H.R. 1065, introduced by Bart Stupak (D-Michigan), would regulate both drugs as schedule III controlled substances.

"The Attorney General shall schedule Gamma y-hydroxybutyrate in schedule I of the Controlled Substances Act (21 U.S.C. 812) and shall schedule Ketamine in schedule II of such Act.

- **H.R. 88 To amend the Treasury and General Government Appropriations Act, 1999, to repeal the requirement regarding data produced under Federal grants and agreements awarded to institutions of higher education, hospitals, and other nonprofit organizations.**

Introduced January 6, 1999, by George Brown (D-California) and referred to the Committee on Government Reform. Referred to the Subcommittee on Government Management, Information and Technology.

"Amends the Treasury and General Government Appropriations Act, 1999 to repeal: (1) the mandate that the Director of the Office of Management and Budget (OMB) amend a specified OMB circular to require Federal awarding agencies to ensure that all data produced under an award (to institutions of higher education, hospitals, and other nonprofit organizations) be made available to the public through the procedures established under the Freedom of Information Act; and (2) agency authority to charge a user fee for obtaining such data at the request of a private party."

- **H.R. 187 To deem the Florida Panther to be an endangered species for purposes of the Endangered Species Act of 1973.**

Introduced January 6, 1999, by Bill McCollum (R-Florida) and referred to the Committee on Resources. Executive comment requested from Interior on January 15.

"...the species commonly known as the Florida Panther is deemed to be an endangered species for purposes of the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.).

Notwithstanding any other provision of law, the Secretary of the Interior shall include the species known as the 'Florida Panther' in the appropriate list published under section 4(c) of the Endangered Species Act of 1973 (16 U.S.C. 1533(c))."

- **H.R. 443 To amend the Packers and Stockyards Act, 1921, to make it unlawful for any stockyard owner, market agency, or dealer to transfer or market nonambulatory cattle, sheep, swine, horses, mules, or goats, and for other purposes.**

Introduced February 2, 1999, by Gary L. Ackerman and referred to the Committee on Agriculture. Referred to the Subcommittee on Livestock and Horticulture on February 11. This Act may be cited as the "Downed Animal Protection Act."

"SEC. 2. UNLAWFUL STOCKYARD PRACTICES INVOLVING NONAMBULATORY LIVESTOCK.

(a) **UNLAWFUL PRACTICES**- Title III of the Packers and Stockyards Act, 1921, is amended by inserting after section 317 (7 U.S.C. 217a) the following new section:

SEC. 318. UNLAWFUL STOCKYARD PRACTICES INVOLVING NONAMBULATORY LIVESTOCK.

(a) **DEFINITIONS**- As used in this section:

(1) The term 'humanely euthanized' means to kill an animal by mechanical, chemical, or other means that immediately render the animal unconscious, with this state remaining until the animal's death.

(2) The term 'nonambulatory livestock' means any livestock that is unable to stand and walk unassisted.

(b) **UNLAWFUL PRACTICES**- It shall be unlawful for any stockyard owner, market agency, or dealer to buy, sell, give, receive, transfer, market, hold, or drag any nonambulatory livestock unless the nonambulatory livestock has been humanely euthanized.

(c) **CIVIL PENALTY**- The Secretary shall assess a civil penalty of not more than \$2,500 against any stockyard owner, market agency, or dealer that violates this section or any regulation or order of the Secretary under this section. A penalty under this subsection shall be assessed by the Secretary on the record after an opportunity for a hearing. Each day on which a violation occurs and each instance of prohibited action against nonambulatory livestock shall be considered a separate violation.

(d) **CRIMINAL VIOLATIONS**- Any stockyard owner, market agency, or dealer that knowingly violates this section or any regulation or order of the Secretary under this section shall be fined under title 18, United States Code, or imprisoned for not more than one year, or both, for each violation.'

(e) **EFFECTIVE DATE; RULES**- Section 318 of the Packers and Stockyards Act, 1921, as added by subsection (a), shall take effect at the end of the one-year period beginning on the date of the enactment of this Act. By the end of such period, the Secretary shall issue rules to implement such section."

- **HR 453 To amend the Animal Welfare Act to ensure that all dogs and cats used by research facilities are obtained legally.**

Introduced February 2, 1999, by Charles T. Canady (R-Florida) and referred to the Committee on Agriculture. On February 11, it was referred to the Subcommittee on Livestock and Horticulture. Executive comment was requested from USDA on February 17. This Act may be cited as the "Pet Safety and Protection Act of 1999."

SEC. 2. AMENDMENTS

(a) SECTION 7- Section 7 of the Animal Welfare Act (7 U.S.C. 2137) is amended to read as follows:

SEC. 7. SOURCES OF DOGS AND CATS FOR RESEARCH FACILITIES.

(a) USE OF CERTAIN DOGS AND CATS- No research facility or Federal research facility may use a dog or cat for research or educational purposes if the dog or cat was obtained from a person other than a person described in subsection (c).

(b) SELLING, DONATING, OR OFFERING DOGS AND CATS- No person, other than a person described in subsection (c), may sell, donate, or offer a dog or cat to any research facility or Federal research facility.

(c) PERMISSIBLE SOURCES- Persons from whom a research facility or a Federal research facility may obtain a dog or cat for research or educational purposes under subsection (a) and persons who may sell, donate, or offer a dog or cat to a research facility or a Federal research facility under subsection (b) are—

(1) a dealer licensed under section 3 who has bred and raised such dog or cat;

(2) a publicly owned and operated pound or shelter that—

(A) is registered with the Department of Agriculture;
(B) is in compliance with section 28(a)(1) and with the requirements for dealers in section 28(b) and (c); and

(C) obtained such dog or cat from its legal owner, other than a pound or shelter;

(3) a person who is donating such dog or cat and who—

(A) bred and raised such dog or cat; or
(B) owned such dog or cat for not less than 1 year immediately preceding the donation;

(4) a research facility licensed by the Department of Agriculture; and

(5) a Federal research facility licensed by the Department of Agriculture.

(d) PENALTIES-

(1) Any person found to have violated subsection (b) shall pay \$1,000 for each violation.

(2) Any penalty under this subsection shall be in addition to any other applicable penalty and shall be imposed whether or not the Secretary imposes any other penalty.

(e) DEFINITION- For purposes of this section the term 'person' includes any individual, partnership, firm, joint stock company, corporation, association, trust, estate, pound, shelter, or other legal entity.

(f) CONSTRUCTION- Nothing in this section may be construed to require a pound or shelter to sell, donate, or offer dogs or cats to research facilities or Federal research facilities.

• H.R. 494 To amend the Endangered Species Act of 1973 to reform the regulatory process under that Act.

Introduced February 2, 1999, by William M. Thomas (R-California) and referred to the Committee on Resources. This Act may be cited as the "Endangered Species Fair Regulatory Process Reform Act." Related bills introduced by Rep. Thomas include H.R. 495—the 'Endangered Species Land Management Reform Act'— and H.R. 496—the 'Endangered Species Criminal and Civil Liability Reform Act.'

According to comments by Rep. Thomas in the *Congressional Record* the purposes of these bills are the following:

— The Fair Land Process Reform bill will ensure open and equal access to the decisionmaking process of federal agencies and allow landowners to identify and criticize poor decisions from the onset.

- Public access to scientific studies and underlying study data and a right for landowners and commercial interests to join in decisionmaking process through a formal rule-making hearing. No more closed decisions using secret information.
- A substantial evidence standard for agency listing decisions and peer review of scientific data. No more tolerance of inadequate science.
- The Fair Land Management Reform bill will ensure Government pays for obligations it imposes on landowners.
- Landowner compensation for significant Government takings.
- Limit on mitigation requirements imposed by Government. No more giving up 30 acres in order to use 1 acre of one's own land.
- The Liability Reform bill will stop unfair Government penalties against landowners.
- No criminal liability for unintended and speculative takings of endangered species. No penalty for modifying so-called habitat in which no endangered species actually exists.
- A 'Safe harbor' and 'No surprises' provision. No more broken promises and the added obligations put on landowners.

• H.R. 525 A bill to provide for the defense of the environment and for other purposes.

Introduced on February 3, 1999, by Henry A. Waxman (D-California) and referred to the Committee on Rules and, in addition, to the Committee on Government Reform. This Act may be cited as the "Defense of the Environment Act of 1999."

SEC. 2. FINDINGS AND PURPOSE

(a) FINDINGS- Congress finds that provisions that reduce protection of the environment have been included in legislation without adequate consideration and an opportunity for Members to vote on the provisions.

(b) PURPOSE- The purposes of this Act are to—

(1) require Members of Congress to vote in the House of Representatives and the Senate on provisions included in legislation that reduce protection of the environment; and

(2) require the Office of Management and Budget to ensure that each department or agency makes available to Congress and the public information to assist in assessing whether provisions included in legislation would reduce protection of the environment.

SEC. 3. APPLICABLE PROVISIONS

(a) IN GENERAL- This Act shall apply to any provision in a bill, joint resolution, amendment, or conference report before Congress that reduces protection of the environment.

(b) PROVISIONS REDUCING PROTECTION- A provision shall be considered to reduce protection of the environment if the provision meets the criteria of one or more of the following paragraphs:

(1) DEFENSE OF CLEAN AIR AND WATER- The provision may allow increased pollution of ambient air, indoor air, surface water, ground water, the oceans, or other terrestrial or aquatic resources.

(2) DEFENSE OF NATIONAL PARKS AND PUBLIC LANDS- The provision may—

(A) cause adverse impacts on the environmental quality of national parks or other public lands, including the ef-

fect of decreasing the quantity or quality of outdoor educational or recreational opportunities on such lands; or

(B) diminish protection of species that may be endangered.

(3) DEFENSE OF CHILDREN'S ENVIRONMENTAL HEALTH- The provision may increase children's exposure to environmental contaminants and other environmental risks.

(c) OTHER PROVISIONS- A provision shall also be considered to reduce protection of the environment if the provision may have the effect of shielding any violators of environmental laws from penalties or limiting judicial review of agency action under the authority of any environmental law.

(d) BASELINE FOR EFFECTS- The baseline for determining the effects of a provision described in subsection (b) or (c) shall be the circumstances that would exist if the provision were not enacted.

- **H.R. 571 To prohibit Federal payments to any business, institution, or organization that engages in human cloning or human cloning techniques.**

Introduced February 4, 1999, by Ron Paul (R-Texas) and referred to the Committee on Commerce. Referred to the Subcommittee on Health and the Environment on February 16. This Act may be cited as the "Human Cloning Prevention Act of 1999."

"Except as provided in subsection (b), no Federal agency shall—

(1) make any grant, contract, or other payment; or
(2) enter into any obligation for making any such payment, to any business, institution, or organization that, within the past one year, has engaged in human cloning, or to any business, institution, or organization that controls, is controlled by, or is under common control with any business, institution, or organization that, within the past one year, has engaged in human cloning.

(b) EXCEPTION- Subsection (a)(1) shall not apply to any payment a Federal agency is obligated to make.

For purposes of this Act, the term 'human cloning' means making an identical, or substantially identical, copy of the genetic material of an individual human being, living or deceased, so as to cultivate one or more new human cells which could, if not otherwise engineered, develop into a new individual human being."

- **HR 574 To require peer review of scientific data used in support of Federal regulations and for other purposes.**

Introduced February 4, 1999, by Richard W. Pombo (R-California) and referred to the Committee on Government Reform, and in addition to the Committee on Science. Referred to the Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs on February 18. This Act may be cited as the "Science Integrity Act."

“SEC. 2. PEER REVIEW REQUIREMENT

(a) IN GENERAL- Not later than January 1, 2001, the head of each Federal department or agency which issues or may issue regulations supported by scientific data shall issue regulations under this section establishing procedures to ensure that the acquisition, interpretation, incorporation, and application of all such scientific data is subject to peer review by at

least two but not more than five individuals from the list created pursuant to subsection (b).

(b) LIST OF PEER REVIEWERS- The head of each Federal department or agency which issues or may issue regulations supported by scientific data shall create, using the Federal Register, scientific and commercial journals, the National Academy of Sciences, and other similar resources, a list of individuals who are qualified and willing to perform peer review functions for the department or agency. Such list shall include only individuals who—

(1) by virtue of advanced education, training, or avocational, academic, commercial, research, or other experience, are competent to review the appropriateness of any scientific methodology supporting regulations that the department or agency may issue, the validity of any conclusions drawn from the supporting data, and the competency of the research or preparation of the scientific data; and

(2) are not otherwise employed by or under contract with the department or agency.

(c) SELECTION OF PEER REVIEWERS- The head of each department or agency shall select individuals from the list created pursuant to subsection (b) to peer review each proposed regulation of the department or agency that is supported by scientific data. No individual shall be selected who—

(1) has actively participated in advocating or opposing the issuance of the proposed regulation;

(2) has a direct financial interest in the proposed regulation; or

(3) is employed by or related to any person having a direct financial interest in the proposed regulation.

(d) PROVISION OF SCIENTIFIC DATA TO PEER REVIEWERS- Peer reviewers selected under subsection (c) shall be provided with all scientific data used in support of the proposed regulation and any other related data requested by the peer reviewer that is reasonably available to the department or agency.

(e) EXPENSES- Peer reviewers selected under subsection (c) shall be reimbursed by the department or agency for expenses directly incurred in performing the peer review, but shall not otherwise be compensated for performing the peer review.

(f) AVAILABILITY FOR PUBLIC COMMENT- Upon receipt of all peer review reports for a proposed regulation, the head of a department or agency shall publish in the Federal Register a notice of the availability of those reports, and the scientific data reviewed therein, for public comment. The department or agency shall make such reports and scientific data readily available upon request and shall receive public comment thereon for a period of 60 days after the publication of notice in the Federal Register.

(g) CONGRESSIONAL REVIEW- Within 30 days after the completion of a public comment period described in subsection (f), the head of a department or agency shall transmit to the Congress—

(1) each peer review report;

(2) all scientific data used in support of the proposed regulation or requested by a peer reviewer;

(3) the response of the head of the department or agency to points of disagreement, if any, among the peer reviewers; and

(4) all public comments received.

The proposed regulation may not be issued in final form until 30 days after the transmittal under this subsection.

(h) FINAL ISSUANCE- The publication of a final regulation peer reviewed under this section shall include a summary of the related peer review reports and any points of disagreement among the peer reviewers, and the response of the head of the department or agency to the peer review reports.

(i) EMERGENCY EXCEPTION- Regulations issued under subsection (a) shall include provisions that permit the issuance of regulations supported by scientific data in emergency circumstances without peer review, on the condition that peer review be completed within 90 days after such issuance.

SEC. 3. DEFINITION OF PEER REVIEW

For purposes of this Act, the term 'peer review' means identifying technical or scientific deficiencies of a proposal, assessing whether the methodology and analysis supporting a proposal conform to the standards of the academic and scientific community, and determining whether a proposal is supported by sufficient credible evidence."

- **H.R. 765 To amend the Poultry Products Inspection Act to cover birds of the order Ratitae that are raised for use as human food.**

Introduced February 12, 1999, by Bennie G. Thompson (D-Mississippi) and referred to the Committee on Agriculture. On February 18, Executive Comment was requested from USDA and it was also referred to the Subcommittee on Livestock and Horticulture.

"SECTION 1. EXPANSION OF DEFINITION OF POULTRY TO INCLUDE RATITES

(a) DEFINITION OF POULTRY- Section 4(e) of the Poultry Products Inspection Act (21 U.S.C. 453(e)) is amended by adding at the end the following new sentence: 'The term includes birds of the order Ratitae, such as ostriches, emus, and rheas, that are raised for distribution in commerce as human food.'

(b) IMPLEMENTATION OF AMENDMENT- Beginning 180 days after the date of the enactment of this Act, establishments in the United States that slaughter or process birds of the order Ratitae for distribution in commerce as human food shall be subject to the ante mortem and post mortem inspection, reinspection and sanitation requirements of the Poultry Products Inspection Act (21 U.S.C. 451 et seq.) rather than the voluntary poultry inspection program of the Department of Agriculture under section 203 of the Agricultural Marketing Act of 1946 (7 U.S.C. 1622)."

- **H.R. 1074 To provide Governmentwide accounting of regulatory costs and benefits, and for other purposes.**

Introduced March 11, 1999, by Tom Bliley (R-Virginia) and referred to the Committee on Government Reform. This Act may be cited as the "Regulatory Right-to-Know Act of 1999."

The purposes of this Act are to—

(1) promote the public right-to-know about the costs and benefits of Federal regulatory programs and rules; (2) increase Government accountability; and

(3) improve the quality of Federal regulatory programs and rules.

- **H.R. 1199 To prohibit the expenditure of funds from the Land and Water Conservation Fund for the creation of new National Wildlife Refuges without specific authorization from Congress pursuant to a recommendation from the United States Fish and Wildlife Service to create the refuge.**

Introduced March 18, 1999, by Richard Pombo (R-California) and referred to the

Committee on Resources. This Act may be cited as the "New Wildlife Refuge Authorization Act."

SEC. 2. NEW REFUGES.

Notwithstanding any other provision of law, no funds may be expended from the Land and Water Conservation Fund established by Public Law 88-578, for the creation of a new refuge within the National Wildlife Refuge System without specific authorization from Congress pursuant to recommendation from the United States Fish and Wildlife Service, to create that new refuge.

- **H.R. 1202 To amend title 18, United States Code, to prohibit interstate-connected conduct relating to exotic animals.**

Introduced March 18, 1999, by George Brown (D-California) and referred to the Committee on the Judiciary. This Act may be cited as the "Captive Exotic Animal Protection Act of 1999."

SEC. 2. TRANSPORT OR POSSESSION OF EXOTIC ANIMALS FOR PURPOSES OF KILLING OR INJURING THEM.

(a) IN GENERAL- Chapter 3 of title 18, United States Code, is amended by adding at the end the following:

SEC. 48. EXOTIC ANIMALS

(a) Whoever, in or affecting interstate or foreign commerce, knowingly transfers, transports, or possesses a confined exotic animal, for the purposes of allowing the killing or injuring of that animal for entertainment or the collection of a trophy, shall be fined under this title or imprisoned not more than one year, or both.

- **HR 1791 To amend title 18, United States Code, to provide penalties for harming animals used in Federal law enforcement.**

Introduced May 13, 1999, by Jerry Weller (R-Illinois) and referred to the Committee on the Judiciary. This act may be cited as the "Federal Law Enforcement Animal Protection Act of 1999."

Chapter 65 of title 18, United States Code, is amended by adding at the end the following:

SEC. 1368. HARMING ANIMALS USED IN LAW ENFORCEMENT

(a) Whoever willfully harms any police animal, or attempts to conspires to do so, shall be fined under this title and imprisoned not more than one year. If the offense disables or disfigures the animal, or causes the death of the animal, the maximum term of imprisonment shall be 10 years.

(b) In this section, the term 'police animal' means a dog or horse employed by a Federal agency (whether in the executive, legislative, or judicial branch) for the principal purpose of aiding in the detection of criminal activity, enforcement of laws, or apprehension of criminal offenders'.

- **S. 345 A bill to amend the Animal Welfare Act to remove the limitation that permits interstate movement of live birds, for the purpose of fighting, to States in which animal fighting is lawful.**

Introduced February 3, 1999, by Wayne Allard (R-COLORADO) and referred to the Committee on Agriculture. Related bill H.R. 1275 introduced by Collin Peterson (D-MINNESOTA).

Amends the Animal Welfare Act to eliminate the provision permitting interstate movement of live fighting birds if the fighting venture is to take place in a State allowing such fights.

- **S.725 A bill to preserve and protect coral reefs, and for other purposes.**

Introduced March 25, 1999, by Olympia Snowe (R-Maine) and referred to the Committee on Commerce, Science, and Transportation. This Act may be referred to as the "Coral Reef Conservation Act of 1999."

The purposes of this title are:

- (1) To preserve, sustain, and restore the health of coral reef ecosystems;
- (2) To assist in the conservation and protection of coral reefs by supporting conservation programs;
- (3) To provide financial resources for those programs; and
- (4) To establish a formal mechanism for collecting and allocating monetary donations from the private sector to be used for coral reef conservation projects.

- **S. 1006 To end the use of conventional steel-jawed leghold traps on animals in the United States.**

Introduced May 11, 1999, by Robert Torricelli (D-New Jersey) and referred to the Committee on Environment and Public Works.

SECTION 1. DECLARATION OF POLICY.

It is the policy of the United States to end the needless maiming and suffering inflicted upon animals through the use of leghold traps by prohibiting the import or export of, and the shipment in interstate commerce of, such traps and of articles of fur from animals that were trapped in such traps.

SEC. 3. PROHIBITED ACTS AND PENALTIES.

It is unlawful for any person knowingly—

- (1) to import, export, ship, or receive in interstate commerce an article of fur if any part of the article of fur is derived from an animal that was trapped in a conventional steel-jawed leghold trap; (2) to import, export, deliver, carry, transport, or ship, by any means whatever, in interstate commerce, any conventional steel-jawed leghold trap; or (3) to sell, receive, acquire, or purchase any conventional steel-jawed leghold trap that was delivered, carried, transported, or shipped in violation of paragraph (2).



IATA Live Animals Regulations

The International Air Transport Association (IATA) Live Animals Regulations (LAR), a mandatory standard for international

transport of live animals by commercial airlines, is an essential reference for professionals in the business of shipping live animals by air as well as for the training of personnel in the industry. It is referred to all over the world by shippers, freight forwarders, airlines, ground handling companies, service providers, veterinarians, laboratories, governments, and animal welfare organizations. Its purpose is to ensure the correct packaging, storing, loading, and transportation of live animal shipments by air. The IATA Live Animals Regulations specify the containers to be used for international carriage of live animals and the precautionary measures to be taken during ground and air transportation. Over 250 airlines worldwide and thousands of their employees use the IATA LAR on a regular basis. The LAR is endorsed as the official transportation guidelines by: The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Office International des Epizooties (OIE), the European Union, and the U.S. Fish and Wildlife Service. For more information or to order, contact or <http://www.iata.org/cargo>

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fax: (65) 438-4666

Announcements...

Publications, Newsletters, Books, and Videos

- Available from the Scientists Center for Animal Welfare (SCAW)

Genetic Engineering and Animal Welfare: Preparing for the 21st Century

Chapters cover topics on: overview of genetic engineering and the well-being of animals, animal well-being and xenotransplantation, ethical consideration related to animal use in genetic engineering. The cost is \$50.

Performance Standards and Animal Welfare: Definition, Application, and Assessment Part I

This is a summary of a conference sponsored by SCAW in 1997 in Baltimore, Maryland. The cost is \$10.

For additional information, contact SCAW, 7833 Walker Drive, Suite 410, Greenbelt, MD 20770-3229, tel: (301) 345-3500, fax: (301) 345-3503, e-mail: scaw@erols.com WWW: <http://www.erols.com/scaw>

- **Fish and Wildlife Reference Service Newsletter**

This newsletter provides access to published and unpublished research reports resulting from the Federal Aid in Fish and Wildlife Restoration Program, the Anadromous Sport Fish Conservation Program, the Endangered Species Grants Program, and the Cooperative Fish and Wildlife Research Units. Announcements of other organizations or commercial products are also included. To subscribe, contact the Fish and Wildlife Reference Service, 5430 Grosvenor Lane, Suite 110, Bethesda, MD 20814-2158, fax: (301) 564-4059, e-mail: fwrs@mail.fws.gov, WWW: <http://fa.r9.fws.gov/r9fwrs/>

- **Selection and Use of Replacement Methods in Animal Experimentation**

U.K., European, and U.S. legislation require the proper consideration of alternatives to animal experimentation. The aim of this booklet is to provide a practical guide to help ensure that those considering animal experimentation have explored all opportunities to avoid animal use and attempted to minimize the numbers involved. The booklet is only intended as the first port of call, but it does highlight the different categories of replacement techniques, and provides references and addresses for further information. Copies are available from: FRAME, Russell and Burch House, 96-98 North Sherwood Street, Nottingham NG1 4EE, UK, tel: +44 0115 958 4740, fax: +44 0115 950 3570, email: frame@frame-uk.demon.co.uk or UFAW, The Old School, Brewhouse Hill, Wheathampstead, Herts AL4 8AN, UK, tel: +44 0158 283 1818, fax: +44 0158 283 1414, e-mail: ufaw@ufaw.org.uk, <http://www.ufaw3.dircon.co.uk>, The cost is £5.00 per copy.

- **Ethics and Youth Livestock Show Videos**

- *Horses, Kids, and Ethics* (13 minutes, 1997) The first video to address the subject of youth horse program ethics.
- *The Line in the Sand* (16 minutes, 1996) The four-step test offered in the video will make clear whether certain showing practices are ethical or unethical.

- *A Step Beyond: A Question of Ethics* (23 minutes, 1995) How to address the issue of livestock show ethics before situations arise at the local level.
- *A Question of Ethics* (20 minutes, 1994) The first and most aggressive educational program in the country to address the issue of livestock show ethics.

These videos were produced by Dr. Jeff Goodwin at Texas A&M University. They are available from the Instructional Materials Service, Mail Stop 2588, Texas A&M University, College Station, TX 77843-2588, tel: (409) 845-6601, fax: (409) 845-6608. The cost is \$55 per video plus 10 percent for shipping and handling.

- **Environmental Enrichment for Nonhuman Primates: An Annotated Bibliography for Animal Care Personnel; Second Edition, December 1998**

This bibliography, produced by Viktor Reinhardt, Ph.D., D.V.M. and Annie Reinhardt, offers animal caregivers, animal technicians, zoo keepers, students, and veterinarians guidance to practical information on environmental enrichment for and training of primates.

The document can be requested free of charge from Viktor Reinhardt, Animal Welfare Institute, 4605 Crescent Road, Madison, WI 53711 USA, or e-mail: viktor@animalwelfare.com
VISIT THE MONKEYS AT: <http://www.primate.wisc.edu/pin/pef/slide/intro.html> and http://www.animalwelfare.com/Lab_animals/biblio/enrich.htm

- **Women's Health: Developing Treatments and Cures Through Animal Research**

This 24-page booklet, available from the Foundation for Biomedical Research (FBR), is part of its ongoing program to educate the public regarding the vital role animal research has in developing treatments and cures for diseases and injuries afflicting humans and animals. Copies are available for \$4 from FBR, 818 Connecticut Avenue, NW, Suite 303, Washington, DC 20006, tel: (202) 457-0654.

- **Journal of Applied Animal Welfare Science**

This journal publishes articles and commentaries on methods of experimentation, husbandry, and care that demonstrably enhance the welfare of animals. Manuscripts of up to 8,000 words are accepted that present new empirical data or reevaluation of available data, conceptual or theoretical analysis, or demonstrations relating to some issue of animal welfare science. Occasional feature articles are accompanied by several invited critical commentaries. In addition, the editors will publish free-standing commentaries, letters, announcements of meetings, news, and book reviews. Unsolicited submission of these are welcome. All manuscripts should be in English. To submit manuscripts or for additional information, contact Dr. Kenneth J. Shapiro, PSYETA, P.O. Box 1297, Washington Grove, MD 20880, tel: (301) 963-4751, e-mail: kshapiro@capaccess.org To subscribe, contact Lawrence Erlbaum Associates, 10 Industrial Avenue, Mahwah, NJ 07430-2262, tel: (201) 236-9500 or (800) 926-6579, fax: (201) 236-0072, email: orders@erlbaum.com

- Available from the Universities Federation for Animal Welfare (UFAW)

Animal Welfare is the established scientific and technical journal that brings together the results of scientific research, technical reports, and studies related to the welfare of animals kept on farms, in zoos, in laboratories, as companions, or living in the wild. This quarterly journal is a focus for the advancement of animal welfare science and technology and helps ensure that relevant knowledge is readily available. The journal is useful for all concerned with the management, care and welfare of animals, such as zoologists and veterinarians, animal house curators, zookeepers, laboratory animal technicians, agriculturalists, and stockmen, as well as undergraduates and other students. Animal Welfare is also of value to legislative and regulatory authorities and other organizations responsible for the welfare of animals. Notes for authors, subscription rates, contents pages, and abstracts of recent issues can be found at
<http://www.ufaw3.dircon.co.uk/animalwelfare.htm>

- *Noise in Dog Kenneling* A survey of noise levels and the causes of noise in animal shelters, training establishments, and research institutions. Animal Welfare Research Report No. 9, G. Sales, R. Hubrecht, A. Peyvandi, S. Milligan, and B. Sheild, 1996, 39 pp. \$7
- *The Principles of Humane Experimental Technique* Originally published in 1959, this book reports results of UFAW-sponsored research on ethical laboratory techniques and expounds the principles of the 3Rs. W.M.S. Russell and R.L. Burch, reprinted 1992, 238 pp. \$25
- *Disturbance Index Method for Assessing Severity of Procedures in Rodents* UFAW Animal Welfare Research Report No. 2, R.J. Barclay, W.J. Herbert, T.B. Poole, 1988, 35 pp. \$7

To order, contact UFAW, The Old School, Brewhouse Hill, Wheathampstead, Herts AL4 8AN, UK, tel: +44 0158 283 1818, fax: +44 0158 283 1414, e-mail: ufaw@ufaw.org.uk, WWW: <http://www.ufaw3.dircon.co.uk> Prices include postage and handling.

- **Raptors and Climbers—Guidance for Managing Technical Climbing To Protect Raptor Nest Sites**

This handbook, produced by the Access Fund in consultation with U.S. resource managers, provides guidance on management of seasonal climbing restrictions to protect nesting raptors, drawing on practices from the 77 climbing locations on public and private land across the United States where wildlife closures are in place. For information or to order, contact Kath Pyke, The Access Fund, P.O. Box 17010, Boulder, CO 80308, tel: (303) 545-6772 ext.104, fax: (303) 545-6774, e-mail: kath@accessfund.org

- **Wildlife and the American Experience: Public Attitudes Toward Fish and Wildlife Management**

To order, contact Responsive Management, 245 East Water St., Harrisonburg, VA 22801, tel: (540) 432-1888, fax: (540) 432-1892

- **Primate Literature Database on the Web!**

The Primate Information Center's Primate Literature Database (PrimateLit) is now available for searching on the World Wide Web as a pilot project through Summer 1999. PrimateLit indexes over 140,000 research publications from 1940 to the present.

There is no charge to access the database during the pilot period. Instead, the PIC staff are soliciting user feedback to help guide development of an outstanding bibliographic search tool for the primatological community. The only requirements for database access are an Internet connection and willingness to answer a short feedback questionnaire.

Access to PrimateLit is by password only. Contact the PIC to obtain your free password.

E-mail: pic@u.washington.edu Subject line: Password Request, Message: Include your full name, affiliation, and e-mail address. A password and instructions will be sent by return e-mail.

- **Wildlife Forever CD-ROM Curriculum for Elementary Grades 3-6**

This comprehensive teacher's guide to conservation education and wildlife contains a multimedia CD Rom featuring video clips, images, narration, and animal and bird sounds. Curriculum materials include lessons plans, "wild word" glossary, student worksheets, species sheets, and assessment tools. For ordering information, contact David Frederick, Wildlife Forever, 12301 Whitewater Dr., Suite 210, P.O. Box 3404, Minnetonka, MN 55343, tel: (612) 936-0605, fax: (612) 936-0915.

Available on the World Wide Web

- **Ag-Links**

<http://www.gennis.com/aglinks/html>

Produced by the Gennis Agency, this site provides websites of interest to agriculture. Areas include general agriculture, farms and companies, associations, markets, magazines and newsletters, government, research and education, and weather.

- **DANR Guide to Disaster Preparedness**

http://www.vetmed.ucdavis.edu/vetext/INF-DI_DANRGuide.html

Produced by the University of California, Division of Agriculture and Natural Resources, this publication provides useful information about preparedness for pets and livestock. An excellent resource for training individuals and groups.

- **Database of Dutch Alternative Methods**

<http://www.pdk.dgk.ruu.nal.dir/new.htm> (while you're here, check out the Report on the Use, Trade, and Harvest of Livestock Sera)

The NCA (Netherlands Center for Alternatives) compiled a database containing descriptions and references of Dutch research projects focusing on the development of alternatives to animal experiments. Many of these projects are financed by the Dutch Alternatives to Animals Platform. The database is available to the public and freely accessible via the PREX homepage ((Steps to follow: click 'to the databases', then 'search the databases'. Login with: NCA-INFO and password: 'NCA-INFO', uppercase).

- **Dutch Veterinary Information Systems**

<http://www.vetinfo.demon.nl/links.htm>

Not only have the Kuiper brothers produced a handy veterinary formulary (VetBase-see elsewhere in this issue), they also have a nice collection of animal- and veterinary-related links on their website.

- **E-Vet-The Professionals Veterinary Site**

<http://www.e-vet.com>

A free veterinary forum run by vets for vets. Also provides access to the latest veterinary texts, animal-related books, software, databases of veterinary suppliers, and related information, including AWIC!

- **Ellegaard Göttingen Minipigs**

<http://minipigs.dk>

The homepage of Ellegaard Göttingen Minipigs contains links to health reports, environmental conditions of the full-barrier facility in Denmark, the Institute of Genetics and Animal Breeding, newsletters, background data—weight development of the minipig, and hematological and clinical chemistry. A special feature is a searchable minipig database of more than 4,800 titles. And it's in English!

- **IACUC and Pain-Related Internet Resources**

<http://netvet.wustl.edu/pain.htm>

About 400 resources relevant to pain, its assessment, management, and physiology. Available from who else but Ken Boschert, D.V.M. at Washington University.

- **Join Hands**

<http://www.joinhand.org>

Join Hands mission is to promote understanding of the processes involved in biological and biomedical research.

- **Kids Corner from the American Kennel Club**

<http://www.akc.org>

Buried in a long list of other items on the homepage of the American Kennel Club is a link to a nice little newsletter for kids on responsible dog ownership. Includes crossword puzzles, a fun quiz, name that breed, and Dear Bailey—dogdom's answer to Dear Abby.

- **Norwegian Animal Welfare Act—in English**

<http://oslovet.veths.no/act.html>

These pages have been compiled by Adrian Smith, D.V.M., Professor and Head of the Laboratory Animal Unit at the Norwegian School of Veterinary Science.

- **Reconstructed Skin—Reproduction of Human Skin**

http://www.loreal.com/us/research/innovations/recons_skin.asp

This site, produced by international cosmetics producer L'Oréal, is a multimedia presentation of how an in vitro human skin model is being used in basic research as well as to test cosmetics.

- **Veterinary Abbreviations and Acronyms**

<http://www.library.uiuc.edu/vex/vetdocs/abbs.htm>

This list, compiled by staff at the University of Illinois at Urbana-Champaign, focuses on abbreviations and acronyms commonly used in veterinary practice.

- **Veterinary Parasitology Images Gallery**

<http://parasitology.icb2.usp.br/marcelocp>

This site, compiled by Mauricio Garcia, D.V.M., Ph.D., University of São Paulo, Brazil, is an image collection of parasites with veterinary medical importance. Included with each image is a brief essay. ■



Third World Congress on Alternatives and Animal Use in the Life Sciences

Bologna, Italy -- August 29 -- September 2, 1999

Scope of the Congress

The aim of the Congress will be to promote the exchange of information on the application of alternatives to laboratory animal procedures, that is replacement alternatives, reduction alternatives, and refinement alternatives, the Three R's of Russell & Burch, in biomedical research, education, and testing.

The scientific program will include plenary lectures, parallel platform sessions, workshops, point/counterpoint discussions, and poster and video demonstrations.

The planning scientific program will be strongly influenced by the First World Congress (Baltimore 1993) and the Second World Congress (Utrecht 1996). Nevertheless, early suggestions for innovative changes will be welcomed.

Congress Venue

The Third World Congress will be held in the Palazzo della Cultura e dei Congressi, which is located at the heart of one of the most important trade fair complexes in Europe, but is only a few minutes away from the historic center of the city of Bologna.

Transport

Bologna's Guglielmo Marconi Airport has direct links within Europe with Barcelona, Brussels, Frankfurt, Lyon, Lisbon, London, Madrid, Munich, Nice, Oporto, Paris, Vienna, and Zurich, and with the rest of the world via the intercontinental airports of Milan and Rome.

The Eurocity train service links Bologna with more than 40 other European cities.

Bologna is a major intersection for Italy's extensive motorway network. Public transport within the city is excellent and includes a direct bus service from the airport to the Congress venue.

Social Program

A Congress Banquet will be held in the Palazzo Albergati, a stately home made famous by a series of dramatic frescos typical of the Emilian School of the 17th and 18th centuries. People accompanying participants will be able to take day trips to Florence and Venice.

Further information can be obtained from European Commission, Joint Research Centre, Public Relations and Publications Unit, 21020 Ispra (VA), Italy, phone: +39 332 789889, fax: +39 332 782435, e-mail: prp@jrc.it ■

VetBase 3.1c

An Electronic Veterinary Formulary

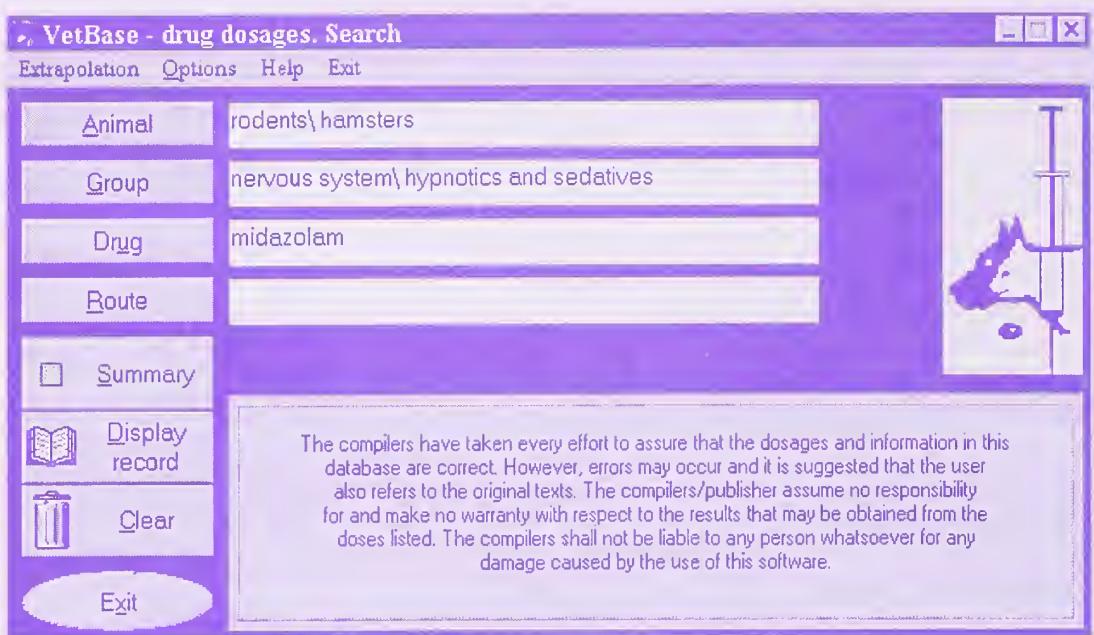
VetBase is a searchable veterinary formulary that covers all classes of veterinary drugs except antibiotics. (A separate database of more than 6,000 antibiotic dosages will be available later this year.) It currently contains more than 13,000 records of veterinary doses covering more than 800 drugs. Of these, more than 4,500 are for pain management. Animals (more than 170 species!) included in this database include traditional laboratory animals, farm animals, birds, fish, reptiles, amphibians, exotic animals and zoo animals. VetBase is updated regularly with new information. The database is produced by Hans Kuiper, Ph.D. and

Henk-Jan Kuiper, Ph.D. of the Dutch Veterinary Information Systems.

The program is easy to use with its built-in search commands. The user selects an animal and can then search for information based on a pharmaceutical class (anesthetics, analgesics, antiparasitics, etc.), specific drug (ketamine, ivermectin, etc.), or route of administration. The following information is available in the database: drug name, dosage(s), route of administration, notes on use and literature references. The extrapolation routine in the program can be used in cases where there is no dosage listed for a particular species. The routine is based on Kleiber's law and extrapolates a specific dose and dosing interval to the dose of another animal type. All in all, it is a handy reference tool that will provide quick answers to drug dosing problems for the busy veterinary professional.

The cost of the program is US \$175 (English version); Hfl 275 (Hfl 323.12 tax included, Dutch version). It will operate on Widows 95 or Windows 98. A Windows NT version is being developed.

(The United States Department of Agriculture does not warrant the quality or usefulness of products or publications over others that may be suitable. These items are included for informational purposes only.)



The Gerbil Veterinary Formulary 1.1

A demonstration program of VetBase

Available **FREE** from Dutch Veterinary Information Systems

The *Gerbil Formulary* is an electronic veterinary formulary with 180 dosages for gerbils. The current version contains only nonantibiotic drugs. Download your free copy of *The Gerbil Formulary* today! Simply go to <http://www.vetinfo.demon.nl>

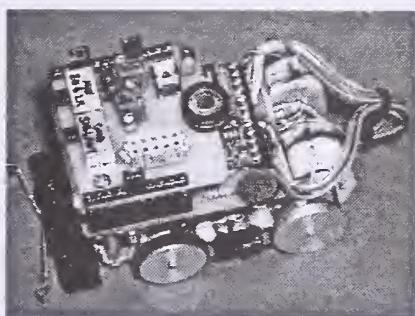
For additional information, contact Dr. H.J. Kuiper, Dutch Veterinary Information Systems, Graafschap 7, 3524 TL Utrecht, The Netherlands, fax: +31-30-289-42-51, e-mail: vetbase@vetinfo.demon.nl

ALTERNATIVES: Robots for Neurophysiology Research

VersaBot/P is a miniature robot designed for use in the neurophysiology lab. VersaBot/P simulates responses of an awake behaving animal while generating waveforms characteristic of intracranial extracellular recordings. VersaBot/P can be used to test your instrumentation and optimize data quality. You will find it reduces your use of live animals resulting in lower costs and fewer trips to the vivarium. VersaBot/P can be used for behavior simulation, setting up a new workstation, troubleshooting instrumentation, signal diagnosis, calibration, student labs, public demonstrations, and more.

VersaBot/P's combination of sensory inputs, computer programmability, and transport make it useful for neural computation and stimulus response modeling. As an animal model VersaBot/P is useful for behavior studies and can be programmed in PBASIC, a simplified form of BASIC.

When constructing a new experimental station VersaBot/P serves as a convenient tool for troubleshooting



and instrumentation setup. Aside from providing a reliable characteristic signal source, VersaBot/P allows researchers to characterize their experimental apparatus while realistic mechanical forces are applied to the interconnect, tether, and commutator. This dynamic form of testing reveals problems that may otherwise fail to show up until after an experiment has been run.

VersaBot/P is a means to capture data from a behaving subject without jeopardizing a live animal. At forums where the use of live animals is prohibited, VersaBot/P provides an allowable yet realistic means of illustrating experimental techniques and the function of lab apparatus. VersaBot/P's usefulness in such cases extends to student labs or while entertaining visitors unaccustomed to animal research. VersaBot/P can be used in all instances in which the use of an animal isn't truly needed or preferred. VersaBot/P is provided complete and ready to run. Software, documentation, and a computer interface cable for downloading your own behavior routines are included.

For additional information, contact Diversified Enterprises, 158 Aero Camino Rd., Santa Barbara, CA 93117, tel: (805) 968-5182, e-mail: Support@divent.com, WWW: <http://www.divent.com/research/index.html>

(The United States Department of Agriculture does not warrant the quality or usefulness of products or publications over others that may be suitable. These items are included for informational purposes only.)

NEW FROM AWIC

There are a limited number of print copies available for each document listed.

- Animal Welfare Act 1966-1996: Historical Perspectives and Future Directions <http://www.nal.usda.gov/awic/pubs/96symp>
- Marine Mammal Water Quality: Proceedings of a Symposium—APHIS Technical Bulletin No. 1868
- Selected Databases for Biomedical, Pharmaceutical, Veterinary, and Animal Science Resources—AWIC Series No. 98-01 <http://www.nal.usda.gov/awic/pubs/selectdata/preface.htm>
- Selected Web Sites for Biomedical, Pharmaceutical, Veterinary, and Animal Sciences—AWIC Series No. 98-02 <http://www.nal.usda.gov/awic/pubs/awic9802.htm>
- Directory of Resources on Alternatives and Animal Use in the Life Sciences 1998—AWIC Resource Series No.1, 2nd Edition
- Information Resources for Livestock and Poultry Handling and Transport—AWIC Resource Series No. 4 <http://www.nal.usda.gov/awic/pubs/livestock/lvstchap.htm>
- Environmental Enrichment for Nonhuman Primate Resource Guide (Jan. 1992-Feb.1999)—AWIC Resource Series No. 5 <http://www.nal.usda.gov/awic/pubs/primates/primate.htm>
- Animal Welfare and Ethics Resources for Youth and College Agricultural Educators—AWIC Resource Series No. 6
- Handling Fish Fed to Fish-Eating Animals-A Manual of Standard Operating Procedures <http://www.nal.usda.gov/awic/pubs/fishhandl.htm>
- Poultry Science Resource List and Rabbit Resource List—Prepared by the Poultry Science Association and Richard Reynells, Ph.D., National Program Leader, Poultry Science, CSREES, USDA, June 1997

Grants...

- **Developing and Improving Institutional Animal Resources**

Release Date: February 19, 1999

PA NUMBER: PAR-99-066

National Center for Research Resources

Application Receipt Dates: June 1, October 1

Full announcement may be found at

<http://www.nih.gov/grants/guide/pa-files/PAR-99-066.html>

Purpose

The National Center for Research Resources (NCRR) encourages the submission of individual animal resource improvement grant applications from biomedical research institutions. The major objective of this program is to upgrade animal facilities to support the conduct of Public Health Service (PHS)-supported biomedical and behavioral research. A related objective is to assist institutions in complying with the U.S. Department of Agriculture animal welfare regulations and Department of Health and Human Services policies related to the care and use of laboratory animals. Support is limited to alterations and renovations (A&R) to improve laboratory animal facilities and the purchase of major equipment items for animal resources, diagnostic laboratories, transgenic animal resources, or similar associated activities.

Eligibility Requirements

Any domestic public or private institution, organization, or association is eligible to apply for this grant if the institution has one or more research projects currently supported by the PHS that involve the use of laboratory animals. Institutions and commercial firms providing only services or products and without a clearly defined animal-related research component are not eligible to apply. Also, this program will not support requests for equipment used for teaching purposes and for housing nonresearch animals. Applications from other Federal agencies or institutions are limited to requests for equipment only. Applicants may not submit more than one application or apply for other NCRR support for developing and improving institutional animal resources in the same Federal fiscal year.

Allowable Costs

Items that may be requested under this grant mechanism include:

- A&R to improve existing laboratory animal facilities and allowable fees associated with the A&R project.
- Major resource equipment related to the improvement project, such as animal cage systems and cage washers.
- Equipment items, or an aggregate of identical equipment items, that have a total cost of \$5,000 (or lower, depending on the institution's definition for equipment). Items that are part of a system and require the purchase of small component parts (for example, a rack and cages or microisolator units) may be requested and priced as a single item. A description of the individual components of such systems must be provided.
- General-purpose equipment items for centralized surgeries, diagnostic laboratories, transgenic animal facilities, and other similar associated activities when they are an integral part of the animal facility and available to all investigators.

– Basic equipment such as microscopes necessary for operation of the facility.

– Environmental monitoring systems. However, if such a system has multiple uses (for example, the monitoring of research data or security), only those costs related to monitoring or providing for animal care (for example, environmental monitoring) are allowable.

Application Procedures

Applications are to be submitted on the grant application form PHS 398 (rev. 4/98). There are two receipt dates per year of June 1 and October 1. Application kits may be obtained from the institution's office of sponsored research and from:

Division of Extramural Outreach and Information Resources, National Institutes of Health, 6701 Rockledge Drive, MSC 7910, Bethesda, MD 20892-7910, tel: (301) 435-0714; fax: (301) 480-0525; e-mail: GrantsInfo@nih.gov Application kits are also available on the Internet at:

<http://www.nih.gov/grants/forms.htm>

Inquiries

Inquiries are encouraged. The opportunity to clarify any issues or questions from potential applicants is welcome.

Direct inquiries regarding programmatic issues to:

W. Fred Taylor, Ph.D., Research Facilities Improvement Program, National Center for Research Resources, 6705 Rockledge Drive, Room 6030, MSC 7965, Bethesda, MD 20892-7965, tel: (301) 435-0766, fax: (301) 480-3770, e-mail: taylorf@ncrr.nih.gov

Questions regarding fiscal matters may be directed to:

Mr. Paul Karadbil, Office of Grants Management, National Center for Research Resources, 6705 Rockledge Drive, Room 6086, MSC 7965, Bethesda, MD 20892-7965, tel: (301) 435-0844, e-mail: paulk@ncrr.nih.gov

- **Kenneth A. Scott Charitable Trust**

The Kenneth A. Scott Charitable Trust was established in 1995 to promote humane treatment of companion animals and to prevent cruelty to small animals, including wildlife. In carrying out the wishes of Mr. Scott, the trustees have made research, education, and current interventions initial priorities.

Research Because overpopulation is at the root of much animal suffering, we wish to facilitate development of contraceptive vaccines for animals. Also, because people will respect and cherish animals the better they understand them, we will place an emphasis on research into animal behavior and cognition.

Education We will consider programs for kindergarten through Grade 12 that teach understanding and compassion toward animals, especially programs that incorporate experiential learning in the classroom, in the field, and at zoos and aquariums.

Current intervention (Ohio only) We will consider support of animal shelters and spay-neuter programs.

The Trust does not award grants to individuals, or for endowments, deficit reduction, or, typically, for capital expenditures or general operating support.

Application Process

Please send a 1-page query letter outlining your project before submitting a proposal.

Proposals should be sent by regular mail on the letterhead of the tax-exempt organization and be no more than 3-4 double-sided pages in length. Please include, concisely: qualifications of the organization and principal staff or volunteers; a description of the project and a statement of how it will improve society's treatment of animals, and program evaluation criteria and methodology. Attach: a project budget reflecting all sources of support; a timeline for project completion; a copy of your IRS 501(c)(3) determination letter; and a copy of your most recent annual report including audited financial statements. There is no deadline for application.

Please send query letters and proposals to: The Kenneth A. Scott Charitable Trust, c/o Foundations and Endowments Group, Key Private Bank, 127 Public Square, 17th Floor, Cleveland, OH 44114-1306, Attention: Dr. Richard Obermanns, Foundation Administrator, tel: (216) 556-4062.

- **National Guide to Funding for the Environment and Animal Welfare**

The new 4th edition of this publication covers over 1,700 foundations and direct corporate giving programs with an interest in the field. Information provided includes: grant maker addresses, financial data, giving priorities, contact names and key officials, list of sample grants, and a range of indexes. The publication is 527 pages and costs \$95. The order code is FIE4. To order, contact The Foundation Center, 79 Fifth Avenue, New York, NY 10003, tel: (800) 424-9836, in New York State call (212) 807-3690, fax: (212) 807-3677, WWW: <http://fdncenter.org/marketplace/catalog/index.html> (*look under environment*).

- **The Doerenkamp-Zbinden Foundation**

The Doerenkamp-Zbinden Foundation awards up to two prizes every year (25,000 or 50,000 Swiss francs). One prize is aimed at scientific research demonstrating the possibility to establish in vitro methods or ethically acceptable experiments in man and thereby replace animal experimentation. The second prize may be awarded for techniques, instruments, or drugs that are clearly suitable to reduce suffering of animals, especially primates, apes, cats, dogs, rabbits and pigs, in animal experimentation. It is the aim of the foundation to honor researchers if their work is both relevant for animal protection and of high scientific quality.

An independent board consisting of 4 to 8 scientists and an equal number of lay people will decide about the merits of the applications. The Prizes will be handed out on the occasion of major scientific congresses or symposia for which the scientific work to be honored is of relevance. Submissions have to be posted before October 1st of each year.

The submissions should contain an accompanying letter, an abstract, one manuscript or major paper, and a short curriculum vitae (2 pages including major publications).

Submissions (6 copies) are to be directed to:

Prof. Dr. med. Dr. h.c. K. Brune, Institute of Experimental and Clinical Pharmacology and Toxicology, Universitätsstr. 22, D-91054 Erlangen, Germany

Conference Announcement

Animal Research: Where Does the Buck Stop

Ethics, Economics, and Responsibility

Kennedy Institute of Ethics
Center for Animal Welfare, UC Davis

October 2-5, 1999

The ethical responsibilities of Institutional Animal Care and Use Committees seem clear — to ensure that experimental and husbandry procedures are refined to reduce animal pain and suffering, and that the minimum numbers of animals necessary are used in research. When it comes to ethical responsibility for the humane conduct of animal research, then, the buck ultimately stops with the IACUC. But ethical considerations can (and increasingly do) collide with reality in situations where IACUCs lack the time, money, or people resources necessary to carry out these responsibilities. Where does the buck stop with respect to providing resources for environmental enrichment, experimental validation of humane endpoints, or retirement programs for animals: with the IACUC, the institution, the investigator, regulators, or other outside agencies? How does the IACUC weigh the cost of refinements against other priorities in animal care and research in general? And what can the IACUC do to increase its effectiveness when ethical responsibilities and the resources to carry them out are not clearly linked?

The conference organizing committee members are John Gluck, Lynette Hart, Joy Mench, Barbara Orlans, Jerrold Tannenbaum, and Philip Tillman. The conference will be held at the Granlibakken resort conference center in Lake Tahoe, CA.

Further details can be obtained by contacting: Sue Pounds Heekin at the Center for Animal Welfare, Center for Special Programs, Meyer Hall, University of California, Davis, CA 95616. Telephone 530-754-8564, FAX 530-752-4508, E-mail: animalwelfare@ucdavis.edu



Guidelines to the Use of Wild Birds in Research

The second edition of the Guidelines to the Use of Wild Birds in Research has been published by The Ornithological Council. The Ornithological Council is an independent, nonprofit organization, representing 10 scientific ornithological societies in North America.

Topics covered by the guide include: IACUCs, permits, investigator impact, collecting and trapping, marking, transport, housing and captive breeding, major and minor manipulative procedures, anesthesia, euthanasia, and code of ethics.

The second edition is now available at no charge on our website at <http://www.nmnhs.si.edu/BIRDNET> in both downloadable and on-line browsable formats.

Orders for print copies can be directed to:

Ellen Paul

The Ornithological Council,
3713 Chevy Chase Lake Drive, Apt.3,
Chevy Chase, MD 20815

Print copies are \$8.00 (including postage) and the check should be made payable to The Ornithological Council.

“Meeting the Information Requirements of the Animal Welfare Act”

The Animal Welfare Information Center (AWIC) of the U.S. Department of Agriculture, National Agricultural Library (NAL) has developed a 2--day workshop for individuals who are responsible for providing information to meet the requirements of the Animal Welfare Act. Representatives from NIH, Office of Protection from Research Risks, and USDA's APHIS, Animal Care will be available for questions and answers . The workshop will be held at NAL in Beltsville, Maryland.

The act requires that investigators provide Institutional Animal Care and Use Committees (IACUC) with documentation demonstrating that a thorough literature search was conducted regarding alternatives. An alternative is any procedure that results in the reduction in the numbers of animals used, refinement of techniques, or replacement of animals.

The objectives of the workshop are to provide:

- an overview of the Animal Welfare Act and the information requirements of the act.
- a review of the alternatives concept.
- a comprehensive introduction to NAL, AWIC, and other organizations.
- instruction on the use of existing information databases/networks.
- online database searching experience.

This workshop is targeted for principal investigators, members of IACUC's, information providers, administrators of animal use programs, and veterinarians. All participants will receive a resource manual.

The next workshop will be held on October 14-15, 1999.

The workshop will be limited to 20 people, so please sign up quickly. There is no fee for the workshop. Please go to the AWIC website at <http://www.nal.usda.gov/awic/news/newsinfo.htm> for additional information and registration forms.

For more information, contact AWIC at phone: (301) 504-6212, fax: (301) 504-7125, or e-mail: awic@nal.usda.gov, or write to: Animal Welfare Information Center, U.S. Department of Agriculture, National Agricultural Library, 10301 Baltimore Avenue, Beltsville, MD 20705--2351

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